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THE MANUAL

OF THE

GUILD AND SCHOOL OF HANDICRAFT.

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THE MANUAL OF THE GUILD AND SCHOOL OF HANDICRAFT:

BEING A GUIDE TO COUNTY COUNCILS AND TECHNICAL TEACHERS.

EDITED BY

C. R. ASHBEE,

M.A. KING'S COLLEGE, CAMBRIDGE; ARCHITECT AND HON. DIRECTOR OF THE GUILD AND SCHOOL OF HANDICRAFT; LECTURER TO THE OXFORD UNIVERSITY EXTENSION; MEMBER OF THE ARTS AND CRAFTS EXHIBITION SOCIETY.

CASSELL & COMPANY, LIMITED:

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1892.

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DEDICATED TO THOSE BY WHOSE
GUARANTEE THE PUBLICATION
OF THIS MANUAL HAS BEEN
MADE POSSIBLE — THE
MILITANT TEACHERS
OF THE GUILD
AND SCHOOL OF
HANDICRAFT.

"As it chaunceth to busie builders, so, in building thys my poore scholehouse (the rather bicause the forme of it is somewhat new, and differing from others) the worke rose dailie higher and wider than I thought it would at the beginninge."

Roger Ascham,
"The Scholemaster."

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THE MANUAL
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Part I.

CHAPTER I.

THE PURPOSE OF THE MANUAL OF THE GUILD AND SCHOOL OF HANDICRAFT.

§ 1. A guide to the constructor.

It is hoped that this book may fulfil two objects. That it may, in the first instance, serve as a guide in such lines of technical education as relate to the development of handicraft and manual training to those who in connection with the various County Councils, schools, and technical institutions, are seeking to establish on a firmer footing what has hitherto been neglected—the intermediate and technical education of the country.

§ 2. A guide to the instructor.

That it may, in the second place, be of more immediate use to the instructor, especially if he be an elementary teacher, since it is on him that the main responsibility will rest of bringing this end to fulfilment.

In offering the present volume to the public in the form of a manual, those who have been primarily engaged in its compilation desire to dwell upon the two following points :—

§ 3. Offered suggestively, not dogmatically nor statistically.

I. First, that the book is issued by the Guild and School of Handicraft, not as intending to add another to the already too numerous systems of training, nor as containing anything in the nature of statistics, but as a statement based upon the experience of several years' successful practical work, and expressing the consensus of opinion among the different members of the Guild and School as to how best the subject—to wit, "handicraft"—with which it deals, may be furthered educationally.

They have no wish to say empirically, This should be *so*, or that *so*; but while on certain subjects they venture to speak as pioneers, they would say merely that they believe from their experience that this is best *so*, and that *so*; others who follow after will correct and perfect what they thus far have striven to initiate.

§ 4. The Manual and the "Transactions."

II. In the second place, it is hoped that the manual will be the forerunner of others, perhaps more advanced and more special, but all of them dealing with the subject of handicraft from an educational and constructive point of view; and that thus it may not only serve the purpose of expressing the educational opinion within the Guild and School, in contradistinction to the "Transactions of the Guild and School," which express opinions of the highest authority offered from without,* but that it may also add some record of value in modern and constructive education.

§ 5. Technical, but a phase of more harmonious education.

The central fact, however, which in this introductory chapter it is needful to dwell upon, and which all those who are engaged in the educational work of the Guild and School seek always to hold before them, is that technical education—of which so much large-mouthed language is used nowadays, and so much comfortable humbug talked—is only a part, and that a small part, of more harmonious training, and that the subjects with which this manual deals are in their turn but a small part of technical education. That, in other words, technical education must be first education and then technical; that the latter cannot be divorced from the former; and that those who are to be taught—be they artisans, elementary teachers, or the boys and girls of a future generation—shall be trained, not in what to *do*, but what to *be*; so that, realising in some measure the Psalmist's hope, "their sons may grow up as the young plants, and their daughters be as the polished corners of the temple."

THE EDITOR.

* *See* "The Transactions of the Guild and School of Handicraft," Vol. I., containing essays and addresses delivered at the Guild and School, by L. Alma Tadema, R.A., W. B. Richmond, A.R.A., W. Holman Hunt, T. Stirling Lee, E. Prioleau Warren, Henry Holiday, Walter Crane, etc. With a preface by G. F. Watts, R.A. Edited by C. R. Ashbee. Published by the Guild and School of Handicraft, Essex House, Mile End Road, E.

CHAPTER II.

THE TECHNICAL EDUCATION MOVEMENT.

By C. R. Ashbee.

§ 6. Tentative classification.

It has come to be recognised that at the present day the education of the country can be classified under three heads—(1) the elementary, (2) the technical and intermediate, (3) the academical—and, furthermore, that this classification serves to show up the sharp line of distinction between the three, and the error in their disunion. This error it is the effort of many present educational thinkers and doers to remedy.

If the system of elementary education for the whole country, with all its imperfections, may be said to be complete, and that of the Universities, however much bound by class or pecuniary limitations, complete also, the technical and intermediate education of the country can as yet not lay claim to either system or completeness.

§ 7. Prevalent chaos.

It is carried on by various agencies, in various ways, and to various purposes. In many cases the agencies compete, to their mutual disadvantage; the ways are without method or organisation; the purposes wanting in directness, ill-defined, or altogether absent. In all cases the work as yet done is experimental, and the results are often doubtful.

The factors that have to be considered in a synthesis of these various competing and overlapping agencies in technical and intermediate education that bear on handicraft might be summed as follows:—The Science and Art Department; the work in training and examining done for special purposes within the scope of intermediate education by such bodies as the Royal Academy, the Royal Institute of British Architects, the Architectural Association, the Art Workers' Guild; then the endowed and university colleges; then the School Boards, and the work that hinges upon them; then the City and Guilds Institute, and the Polytechnics and technical schools that are growing up around in connection with it; then the University Extension, seen

mainly in the Oxford, Cambridge, and London movements; then the many experiments conducted in different parts of the country by private enterprise and energy, some of these of a more or less amateur nature, such as, for instance, the various classes, good enough in their way, conducted under the auspices of the Home Arts and Industries Association, with others under the direction of experts and specialists; and last, but not least, the County Councils in their recent action with regard to technical education.

§ 8. Waste of energy, and overlapping agencies in London.

Without attempting to trace how far these agencies compete and overlap in the country generally, it may not be out of place to point to some instances that more especially offer themselves in London, where the experiments are more numerous, and where the need for organisation is more urgent. They in themselves will be quite sufficient to serve as a type of the waste of energy that is going on in the country generally.

In the first instance, we have the Science and Art Department, with its elaborate system of grants and examinations for various subjects. Trenching upon it in principle, if not in practice, is the scheme of technological examinations of the City and Guilds Institute. Many, I believe, would wish to see the former, subject to certain reformations—as, for instance, the payment by results system—incorporate the latter within it, and the Department become one for Science, Art, and Technology, with the province of Industrial Art clearly marked out. There are then the great Polytechnics and technical schools promoted by the combined agencies of the City Companies and the Charity Commissioners. These have the advantage of more centralised planning; but as far as technical education goes, their action, subject to the limitations of distance, is also an overlapping one; they are wanting in purpose, cannot as yet be said to be in touch with the needs of the districts in which they are situate, and often do not attract the people for whom they are intended. The term "experiments" applies very fitly to them, though the experiments are on a large scale. There is then the London Society for the Extension of University Teaching, also circling in its own sphere, with its excellent, though somewhat limited, range of subjects for lectures. Here, likewise,

some of the work overlaps with other educational work of a similar nature, and there would seem, furthermore, to be an effort, though as yet only partially successful, to bring the society in touch with London artisans. Doubtless this will be accomplished later by the London, as it has been in a great measure by the Oxford and Cambridge Extension movements, when the work grows more comprehensive, and the Board more fully equipped to meet the newer wants that are finding expression in the newer fields of technical and intermediate education.

There is then the London School Board, similarly self-contained, and in like manner doing work in intermediate education that overlaps with other that is done elsewhere. As an instance of this might be cited the system, recently started, of manual training for its teachers, without any regard to the training already being given at other technical institutions to the same end, thereby applying money from the rates to a purpose, as some think, questionable, inasmuch as the elementary teacher is prepared to pay the fees imposed at these institutions, the number of students trained at them is greater than at the Board's classes, and the instruction given is more comprehensive.*

The excellent curriculum of studies recently instituted by the Architectural Association is another instance of overlapping work ; though it may be urged that work is being there done which the Royal Academy schools neglect, and that the young architect there receives a more special instruction than he could obtain in any existing technical school or institute.

For that portion of technical and intermediate education, however, which approaches more nearly to the elementary and less to the special, and which is of consequently greater value to the community, little or no provision has as yet been made ; it is left mostly to private enterprise, is relegated to classes dependent on the private purse and enthusiasm of the teacher ; or, what is much worse, if the subject be manual work, on the sale of the half-trained productions of its pupils ; or it is placed in the charge of one of the great institutions that have regard more for the number of their pupils than

* Since these sheets have been through the press, it has been decided that these classes are to be discontinued.

for the class from which they are drawn, and thus often incur the risk of "gilding the leisure of the clerk" with what was intended for the improvement of the artisan.

And so there are numberless other instances, notably among the smaller and private ventures, many of whom seek rather to damage each other than to assist their own pupils, or work to a common end. Perhaps the object of these is to bring forth the new ideas, and having done so to perish.

Lastly are the County Councils, for whose "beer money," outside the metropolis, though greatly affecting it, all the schools and institutes and classes are at present scrambling.

And with all this nobody knows exactly what to do, and much money and much energy are being wasted.

§ 9. Wanted, a purpose and a method.

What is wanted is a purpose, an ideal—a definite goal to work to co-operatively. We can get plenty of healthy rivalry in the energy of teachers and the emulation of students and of schools, without applying a wasteful competition to our whole scheme of intermediate and technical education, if scheme it may be called. What is wanted is a purpose—a *purpose* that shall show, in the first instance, what technical and intermediate education shall comprehend, and what it shall fulfil; next what is wanted is a *method*, regulated from above, with full freedom of action below, in which all the different agencies shall be given a place or classification—a method in which the educational curriculum of the great institute shall be laid down for it, and the limitation of its area defined—a method in which the work of a strong and liberally-minded examining body for technological and industrial purposes shall be recognised, and by which the instruction given in all schools at present existing shall be correlated to that of any school beside, above, or below it, and which shall give to private or voluntary enterprise a place to work up to and into—a method, in fine, through which shall be mapped out the province of technical education, its boundary here the elementary school, there the workshop of the trade, there the University.

§ 10. Is it optimism or pessimism in the immediate future?

And from all this we are as yet remote. To an optimist it will doubtless seem that the many experiments are a healthy sign of the growing movement, that the old threadbare cloak of book-learning

bequeathed to us by the Renaissance is being cast aside, and that we are seeing the need for that more *harmonious education* by which all alike shall profit in head and heart, and hand and eye.

But, the pessimist will say, we have had ten years of experimenting now, and will—especially if he be the practical-minded Englishman—clamour for results, perhaps even call for a Technical and Intermediate Education Act for England. And there will be many to answer his call, not only in the country generally, but in London especially, for in London the waste is most evident ; and the progress of technical and intermediate education in London—for progress it must be called—is not unlike that of the snail that bravely toiled three inches up her stick each day, and slipped down two each night.

C. R. Ashbee.

CHAPTER III.

THE EXPERIMENT OF THE GUILD AND SCHOOL OF HANDICRAFT.

By C. R. Ashbee.

For the Committees of the Guild and the School.

§ 11. Methods of the Guild and School.

SUFFICIENT is now generally known of the Guild and School of Handicraft to make it needless for us here to enter into any relation of its origin or its growth during the past five years.* Its central feature is the Guild or co-operative productive workshop, in which various branches of artistic handicraft are pursued :—Furniture metal work, gold and silver work, jewellery, leather work, gesso and decorative painting, and such things as conveniently group themselves under the direction of architecture. In conjunction with the Guild, and in part dependent on it, is the School, in which various forms of handicraft are imparted—not as trades, but educationally—in the evenings, to those who care to come and be taught. In conjunction with the Guild or productive, and the School or educational, is the club or social side of the work. In its forms of government the leading or central committee is that of the Guild, elected permanently ; then the School or educational committee, which is elected annually by those who assist in the financial support of the School. Dependent on these are the committees of the students and the club ; and acting entirely independent of either Guild or School is the University Extension Committee, directly responsible to the London Council for the University Extension Centre established at Essex House. These committees, together with the terminal school curriculum, etc., are given below.

§ 12. The development of its educational work.

What we need take into consideration here is the development of certain portions of the educational work of the Guild and School during the years 1891 and 1892 at Essex House, and since the time that the principal

* For this, *see* the "Short History of the Guild and School," by C. R. Ashbee, published in the "Transactions," Vol. I., and separately. (Pub. Guild and School, Essex House, Mile End Road, E.)

responsibility for the development of this has been taken over by the working artisans of the Guild. Since the entry of the Guild and School into Essex House, the growth, not only of the whole Guild and School, but of this educational work in particular, has been rapid and expansive. New workshops have been built for the Guild, the work of which has materially increased; while the School has grown to double the number of the year 1890, the classes having increased from seven to fourteen, and the number of elementary teachers being trained from 40 to over 100. The ordinary instruction in design, drawing, carving, modelling, carpentry, etc., has gone on as formerly, and the instruction for schoolmasters especially has increased to a very great extent, and the annual and spring lectures continued in the usual manner.

By the connection with the City and Guilds Institute, who, at the instigation of the teachers' committee of the Guild and School, extended their system of technological examinations to meet the requirements of elementary teachers, the first step was taken towards placing the Guild and School, as far as its educational work is concerned, on the footing of a college, in contradistinction to the ordinary technical school. This has been further developed by the invitation of country teachers to Essex House during their vacation-time, and the arrangement for them of courses of instruction to qualify them for the City and Guilds certificate. (*See* the terminal curriculum below, p. 32.)

By the establishment of the Mile End University Extension Centre at Essex House a further stimulus has been given to the collegiate idea. Acting under distinct and independent government, this Centre has been formed with the object, it is hoped, of dealing more especially with the higher and theoretical aspects of art and technology, and it is believed that through its means a more definite purpose may be given to some of the practical teaching already carried on by the Guild and School at Essex House. Though the London Universities Joint Board have as yet not been able to meet the want of the Centre, the London council for the Extension of University Teaching have recognised the want by sanctioning the Centre's establishment. It is hoped by all those who were influential in its formation

that the satisfaction of the want thus expressed will not be long to seek.

§ 13. The extension of the work of the Guild and School under the County Councils and outside bodies.

Perhaps the most important of the various educational undertakings of the Guild and School of Handicraft in the past year is the work that has been committed to it by different County Councils or the technical committees acting for them or in connection with educational work in the counties. The County Councils, by applying the "beer money" to technical education, have shown themselves to be in need of instructors, inspectors, and men qualified to pioneer a new educational venture; and the Guild and School has adapted itself to these requirements by sending out men to assist in administering these grants in different parts of the kingdom.

§ 14. The Guild and School as a technical college.

What it is important in this issue to observe is that the Guild and School is thus training a staff of instructors—artisans primarily, and then elementary teachers—who shall be able to carry the sound traditions of teaching into other parts, or guide in the formation of schools similar to the mother institution. The State has as yet made no provision for the training of technical trainers, though it has given money for technical teaching. When the time comes for the recognition of this omission, the Guild and School will, it is hoped, have definitely established itself as the collegiate centre for meeting this want.

§ 15. Work with the County Councils.

A detailed statement of the outside work of the Guild and School—that may be of some service to constructing committees—is provided by Mr. Frank Prout in the following chapter; all that it is needful here further to dwell on are some of those ideas that are regarded as fundamental by those who guide the destinies of the Guild and School—ideas relating both to the productive and to the educational side of the work.

§ 16. Principles on which the work of the Guild and School is based.

We hold, then, that there is a dignity in handicraft rightly pursued and rightly understood; that the cry of the application of art to industry, of sounder technical training, can only be met by the right understanding and study of handicraft; we hold that, in order rightly to understand and to produce, production must be founded on some sort of co-operative basis, and the principles of mastership modified so as to give freedom

to the individuality of the producer, trusting in his allegiance to the corporate whole. The principles which went so far towards the success of the recent Arts and Crafts Exhibitions—of bringing forward the designer and executant of each piece of work—we consider, are fundamentally sound; and we hold that any productive business, where a man's brain and hand are brought into play, should be based upon them. We hold that to carry these principles out successfully, their furtherance must be entrusted to the producers themselves, with as few middlemen as possible, and with as direct contact as is possible between producer and consumer. Then, inasmuch as the work of the Guild lies a great deal among architects, and inasmuch as to the architect falls a great part of the organisation of labour and the employing of it, without himself being in the position of employer or of reaping the profits of production, we hold that the architect should be regarded as a senior workman, and that every means should be taken of bringing workmen in direct contact with him, thus obviating, as far as possible, many of the evils of the system of contract. In the sphere of production these principles may be summed up as the "workshop principle," but this "workshop principle" also has an educational bearing. In the training of handicraft we hold that it cannot be taught—in the manner of the ordinary art school—by making drawings, by making designs, by "stippling from the antique," and so forth; but must have direct relation to material in every possible variety. A designer cannot be taught on paper; he must be taught in wood, in clay, in leather, in metal, in wax, in the actual substance in which he is to design. This is the workshop principle applied to education; and in so far as we enter our protest against the paper designer, we would do so, indirectly, also against the artist of the art school. We say, Let him become a handicraftsman —he will do better so; let him leave the landscape painting and the portraiture, and study design in its relation to something more immediately productive—he will do better so; and in so doing he will recognise in the production of simple things something hitherto unrecognised. This, again, is the workshop principle. Finally, we hold that these productive ideas in their

educational bearing should be taught to the elementary teacher; they shall widen for him the narrow world that the Department has created him into, and they shall help him in his turn to teach the young something of that dignity of handicraft of which he can be no more than the exponent. This, again, is the workshop principle; and here it is not unfitly entrusted to those who have in their hands the moulding of the workmen of the future. These, briefly, are the principles on which is based the experiment of the Guild and School of Handicraft.

C. R. Ashbee,
For the Committees of the Guild and School.

CHAPTER IV.

THE DEVELOPMENT OF THE WORK OF THE GUILD AND SCHOOL IN THE COUNTIES AND IN OUTSIDE SCHOOLS AND WORKSHOPS.

By Frank Prout, Secretary of the Guild and School.

§ 17. County Councils and technical education.

In August, 1891, a circular was issued by the Guild and School of Handicraft, stating to what extent its members were prepared to offer their services to the County Councils with a view to the allocation for educational purposes of the various grants made in different counties for the advancement of technical education, and offering some suggestions as to the practical furtherance of the work in the province of handicraft. The replies which I, as secretary of the Guild and School, received to this circular were so numerous, and expressed in so marked a degree the grateful eagerness of all the correspondents for any advice or assistance that could be given them in the constructive work they had in hand, that it may be well to give the circular here, together with some account of the results which up to now have accrued from it and are yet to be expected.

COUNTY COUNCILS AND TECHNICAL EDUCATION.

The Guild and School of Handicraft,
Essex House, Mile End Road,
London, E.

September, 1891.

IN VIEW OF THE RECENT ACTION OF THE COUNTY COUNCILS, SCHOOLS, AND OTHER CORPORATE BODIES IN THE MATTER OF TECHNICAL EDUCATION, AND ALSO OF THE MANY DEMANDS RECEIVED BY THEM FROM VARIOUS QUARTERS, THE GOVERNING BODY OF THE GUILD AND SCHOOL OF HANDICRAFT HAVE DECIDED TO OFFER THE FOLLOWING SUGGESTIONS TO THE COUNTIES FOR CARRYING OUT SOME OF THE OBJECTS REQUIRED.

(1) The Guild and School of Handicraft is ready to prepare schemes for the organisation of the manual training in any

county, in any district (urban or agricultural), or in any school or institution.

(2) Also to send, in conformity with such schemes, fully competent and qualified craftsmen of the highest skill as instructors in the elementary handling of different materials such as wood, metal, clay, etc., in such lines of work as carpentry, joinery, wrought and hammered work, carving, modelling, also mechanical drawing, designing, etc.—the instructors being men who, themselves artisans, are likewise well conversant with the educational curriculum of the School of Handicraft.

(3) Also, where it is sought to develop local training by means of local men, to send, as inspectors from London, men of practical skill, and at the same time of educational experience, to examine and report upon the training given in country and other schools and workshops.

(4) Also to advise as to the planning or erection of any school buildings, and to superintend the erection of the same.

(5) Also to supply and fix all necessary plant, tools, and equipments.

(6) Also to supply, or to advise as to the selection and circulation of, any works of handicraft, replicas, casts, working models for practical lessons, diagrams, photographs, designs, etc., in conformity with the wants in special cases.

(7) Inasmuch as the work in the School of Handicraft has, during the last three years, been found to be most successfully furthered by the instruction given by the artisans of the Guild to masters and teachers of elementary schools in London—some 80 of these masters being at present on its books—special attention will be paid by the Guild and School to this branch of the work in any scheme or system of teaching drawn up by it for school or county, it being the masters of elementary schools who have the training of the artisans of the future in their hands.

A detailed draft or manual will be issued shortly, which contains information and advice as to the above subjects, and which may be obtained on application to the secretary of the Guild of Handicraft, Mr. Frank Prout, Essex House, Mile End Road, E.

This draft, together with any others of a more special nature, is issued with the approval of the school or educational committee of the Guild and School of Handicraft, the functions of this committee being educational and consultative only. Any scheme, if accepted by county, borough, or school, may—at the option of those for whom it is prepared, and with any modifications by them found wise—be placed into the hands of the Guild of Handicraft to be carried out into practical working.

The operation of the system employed by the Guild and School at its own centre may be seen by reference to the volume of Transactions published at the commencement of this year, or by a visit to the hall and workshops at Essex House, where also

further information may be obtained as to the educational work conducted from London in other parts of the country.

Signed on behalf of the Guild and School of Handicraft by the chairman of the committee of the School of Handicraft,

C. R. ASHBEE,
Architect and Hon. Director of the Guild and School.

It is requested that all communications relative to the above be addressed to the Secretary of the Guild of Handicraft,

FRANK PROUT,
Essex House, Mile End Road, E.

§ 18. Results from the above.

The letters which we received in response to this circular, forwarded to the chairmen of the different technical education committees of the County Councils, led to various and important results.

In the first place, we have been invited to draw up for different County Councils, or the technical committees acting for them, schemes for such portions of the technical work pursued by them as could be embraced by the above suggestions. These schemes have in some cases been accepted *in toto*, in others adopted with certain modifications; in others, again, they have been incorporated into the schemes formulated by the local committees themselves.

In some instances the work proposed has not yet been put into operation, but in the majority of cases where the schemes have been accepted it has been pressed actively forward.

The work in question up to now has consisted in sending out inspectors and instructors to country districts to examine work done, and to teach, in carving, carpentry, joinery, drawing, designing, modelling, etc., and our representatives have now, in one capacity or another, gone into Surrey, Essex, Shropshire, Hertfordshire, Staffordshire, Cheshire, and in and about London and Middlesex, bringing with them the ways and methods of the School of Handicraft. As a rule, subject to the instructor's recommendation, we equip the school, make the benches, and provide the tools—country schools thus having the advantage of skilled selection—while sets of designs, working drawings, casts and models (the latter specially chosen by and under Mr. Ashbee's

selection as architect and honorary director), are provided for purchase or loan, and circulated where needed.

§ 19. The peripatetic instructor.

It is interesting to note that we have borrowed from the University Extension the system of the peripatetic teacher, and this up to now has been shown to answer very well. Different sets of tools are provided to small—principally country—workshops and schoolrooms, and our representative goes the round from village to village, each receiving its day in the week of practical teaching, object lesson, and oral instruction.

§ 20. The schemes for the counties.

As regards the schemes, they are prepared subject to the authorisation of the school or educational committee, bearing Mr. Ashbee's signature as chairman of the school committee, and the nominations to appointments are made by him as honorary director; the schemes themselves, and all details of organisation, are then put into practical working by the Guild.

The number of centres visited, or appointments under the County Councils or other educational bodies accepted by our instructors or those who have passed through the curriculum of the School, has in the last year been about 40. These appointments are of two kinds—the first (the most numerous and most important) are to artisans; the second, to elementary teachers who have passed through the teaching of the School of Handicraft—these latter acting independently of the Guild and School organisation. In both instances the traditions of teaching followed in the mother institution are pursued in the branch or kindred schools and classes.

§ 21. Finance.

As regards finance, it has been often found difficult, owing to the various conditions of different localities, to determine a charge that shall be similar in all cases. We reckon, however, as a rule on a basis of from 2s. 6d. to 5s. an hour, and these charges are subject to such modifications as may be entailed by greater numbers of pupils, variety of contingent centres, provision of material, and travelling expenses. It has, not unfrequently, been found wise to enter into a definite contract with a technical committee to perform a certain educational course for a definite sum, arranged after the consideration of all possible expenses. In this case, some member of the Guild of Handicraft is

appointed to act as the Guild's representative under the local committee, and he is left free to carry out the education needed, subject to supervision on either side.

§ 22. Practical or "bench lectures."

While it is not within my province as secretary of the Guild and School to discuss any matter in this manual from its educational aspect, I am authorised to insert in this chapter the appended scheme for practical lectures, to be delivered either independently or in conjunction with, and as further development of, the instruction already given.

We have found that in many cases demands have been made of our instructors to give something more than the actual instruction at the bench, or at the design table—something more than the handling of the tool, be it plane, chisel, or punch. They have been asked to speak about the subject, and describe it as well as perform it. We have, therefore, been led to the preparation of a series of practical or "bench lectures"; and we believe that these may be of educational value, especially in village parts, where what is mainly wanted is to give educational background—"workshop pictures," as they have been, not inaptly, termed in one of the accompanying lectures. It is proposed that the lectures shall be delivered at the bench, and with such models or appliances as may be deemed necessary in each case by the instructor. The lectures will be conversational, rather than formal; and it is considered that they may be, not inaptly, delivered in connection with any existing course of instruction, and in series of 2, 3, 6, as the case may be.

As regards cost, a regular fee of 30s. a lecture, *plus* travelling expenses, has been arranged; and it is believed that this further development of the peripatetic teacher's work may meet a want hitherto not provided, inasmuch as it deals with a kind of technical instruction not given by the University Extension lectures on the one hand, or by the teacher in a class on the other, in so far as both converge on to technical instruction. The lectures might, not inaptly, be termed "intermediate" courses, and similar to that delivered recently by Mr. Ashbee, at Essex House, on "The Teacher in the Workshop; or, How to Begin in Technical Education."

§ 23. The courses of lectures and the lecturers.

"BENCH LECTURE" LIST (FIRST SERIES).

Each lecture will be practically illustrated.

	Courses.	
"Joints in Wood"	(2, 3, 6)	C. V. ADAMS (London Trades' Council, Guildsman, Senior Cabinet Maker, Guild of Handicraft, Instructor in the School of Handicraft).
"The Work of the Carpenter, the Cabinet Maker, the Joiner" ...	(2, 3, 6)	
"Properties of Woods"	(2, 3)	
"Carpenters' and Joiners' Tools"	(2, 3, 4)	
"Course of Manual Instruction to Elementary Teachers" ...	(3, 4, 6)	
"The Processes of Timber, from Felling to Using"	(2, 3)	
"English Gothic Carving" ...	(2, 3)	JOHN WILLIAMS (Guildsman, Metal Worker and Carver, Senior Instructor in the School of Handicraft).
"The Florentine Modellers" ...	(2, 4, 6)	
"The Hammered Metal Worker"	(2, 4, 6)	
"The Clay Modeller"	(2, 4, 6)	
"Leather and Gesso Work" ...	(2, 3)	
"The Carver"	(2, 3, 4)	
"Carving Tools and Materials"	(2, 3, 4)	
"Hammered Hollow Ware" ...	(2)	
"Principles of Design"	(2, 3)	
"Design in its Relation to Carving"	(2, 3)	
"Design in its Relation to Modelling"	(2, 3, 4)	
"Design in its Relation to Embossed Work"	(2, 4, 6)	
"Elementary Principles of Practical Joinery and Cabinet Making"	(2, 3)	W. CURTIS (Guildsman, Cabinet Maker, Instructor in the School of Handicraft).
"Joiners' Pictures for Village Boys"	(2, 3)	
"Elementary Principles of Practical Joinery"	(2, 3)	A. G. ROSE (Guildsman, Joiner, Instructor in the School of Handicraft).
"Village Boys and Workshop Pictures"	(2, 3)	
"Some Principles of Design" ...	(2, 3)	W. A. WHITE (Guildsman, Metal Worker, Instructor in the School of Handicraft).
"Essays in Relief Work" ...	(2, 3, 4)	
"Village Boys and Workshop Pictures"	(2, 3)	
"The Craft of the Coppersmith"	(2, 3)	S. BAINES (Coppersmith, Member of the Guild and School of Handicraft).
"Hammer and Anvil"	(2, 3)	
"First Principles of Metal Work"	(2, 3, 6)	
"Elements of Construction in Metal Work"	(2, 3, 6)	
"The Uses of Metals"	(2, 3, 6)	
"The Plough in All Ages" ...	(2, 3)	
"Boilers"	(2, 3, 4)	

"Bookbinding as It Is, and as It Ought To Be" ... ... (3, 6)	Frederick Rogers (Binder, Pres. of the Vellum Binders' Trade Soc., 1892, Member of the Guild and School of Handicraft).
"The Work of the Wheelwright" (2, 3) "Principles of Vehiculation" ... (2, 3) "Some Applications of Mechanism to the Construction of Vehicles"... (2, 3, 6) "Smith's Work"	W. J. Pierce (Wheelwright, Member of the Guild and School of Handicraft).
"Processes of Lithographic Draughtsmanship" ... ... (2) "The Progress of a Chromo from the Workshop to the Village Schoolroom" (2)	F. W. Harrison (Lithographic Draughtsman, Member of the Guild and School of Handicraft).
"The Elementary Teacher as a Pioneer in Manual Instruction" ... (2, 3) "Systems of Training for the Teacher and the Child in Manual Instruction" (2, 3, 6) "The Elementary Teacher at the Bench" (2, 4, 6) "Elements of Manual Instruction from the Schoolmaster's Point of View" (2, 3, 6)	T. Tiley (Headmaster of the Newport Road Board School, Member of the Guild and School of Handicraft).
"Trees: Their Growth, Nature of Different Woods" ... ... (2, 3, 6) "Pædagogic Woodwork" ... (2, 3, 6) "Timber: Its Uses, the Effects of Climate upon its Shrinkage" ... (2, 4)	G. P. Clarke (Member of the Guild and School of Handicraft, Headmaster at Channelsea, Stratford).
"How to make Manual Instruction Useful to Boys" ... ... (2, 3) "The Province of the Elementary Teacher in Manual Instruction" ... (2, 3)	R. T. Soar (Headmaster of the Free School, Stratford, Member of the Guild and School of Handicraft).
"The Structural Growth of Timber" "Elements of Training in Manual Instruction" ... ... (2, 3) "The Province of the Elementary Teacher in Manual Instruction" ... (2, 3)	E. J. Tanner (Member of the Guild and School of Handicraft).
"Elements of Training in Manual Work" (2, 3, 6) "Woods and Their Uses" ... (2, 3, 6)	G. Howard (Headmaster St. Mary's School, Finchley).

"Drawing as Applied to the Workshop" (2, 3)
"A Course of Instruction in Technical Drawing" ... ... (6)
"Joints in Woodwork, for the School-room" ... ... (2, 3, 4)

T. P. Wyles (Master Odessa Road School, Member of the Guild and School of Handicraft).

§ 24. Possible future expansion.

I shall be happy to give any further information on the above, or to enter into any negotiations concerning either it or the other matter dealt with in this chapter; and I cannot close it more fitly than with the hope that the organisation thus far initiated may, by virtue of the work it is doing, develop yet further; and that the invitation here given in the name of the Guild and School will be responded to. Indeed, there are many ways in which it would seem that this might be done, and we are looking forward to some system by which, with the aid of our peripatetic teachers and the co-operation of the various local authorities, a method common to all the different classes may be instituted, the instruction graded and defined, and the various agencies united together, so that their combined action may be more easily turned to common purposes, and to the improvement of the education of each locality.

Frank Prout,
Secretary of the Guild and School of Handicraft.

SUPPLEMENT TO PART I.

§ 25. Guild and School Committees.

We give here for reference—(1) the committees; (2) the series of lectures; (3) the educational curriculum, to which allusion has been made in the foregoing chapters :—

The GUILD COMMITTEE, for the Guild, the affiliated workmen, franklins, apprentices, etc.

C. R. Ashbee	...	*Architect and Hon. Director of the Guild and School.*
John Pearson	...	*First Metal Worker.*
C. V. Adams	...	*Foreman and First Cabinet Maker.*
John Williams	...	*Metal Worker.*
W. Curtis...	...	*Cabinet Maker.*
W. A. White	...	*Metal Worker.*
A. G. Rose ...	...	*Joiner* (*Restoration Work*).

Hon. President of the School of Handicraft:
The Marquis of Ripon.

The SCHOOL or EDUCATIONAL COMMITTEE, elected annually by the supporters of the School.

C. R. Ashbee	...	*Architect and Hon. Director of the Guild and School.*
C. V. Adams	...	*Cabinet Maker.*
W. J. Pierce	...	*Wheelwright.*
J. Williams	...	*Metal Worker.*
S. Baines ...	...	*Coppersmith.*

Dependent on these are the Students' and Teachers' Committees.

The STUDENTS' COMMITTEE, representing the students of the School.

J. J. Cameron	...	*Clerk.*
W. J. Pierce	...	*Wheelwright.*
G. D. Smith	...	*Metal Worker.*
C. Barker...	...	*Lamp Maker.*
H. Gardham	...	*Clerk.*
J. Harrison	...	*Lithographic Draughtsman*

THE ELEMENTARY TEACHERS' COMMITTEE, representing the students of the School who are elementary teachers.

C. BALLARD.
A. BATTY.
W. D. BENTLIFF.
W. CREDLAND.
G. P. CLARK.
H. FARMER.
H. FREEMAN.
W. GOWER.
G. HOWARD.
E. HILDRED.
T. LOVELL.
R. T. SOAR.
E. J. TANNER.
G. TWINE.
T. WYLES.

T. TILEY, *Hon. Sec.*

§ 26. Annual Lectures.

The series of annual lectures and lecturers from the year 1888 up to date are as follows :—

[Those marked * were practically illustrated. Those whose names are marked with a † are those whose addresses and lectures have been reprinted and published by the Guild and School. (*See* page 96.)]

1888.

SIR WILLIAM HART-DYKE / THE MARQUIS OF RIPON	"On the Opening of the Guild and School of Handicraft."
†W. HOLMAN HUNT ...	"An Address on the Opening of the Whitechapel Picture Exhibition."
*HENRY BLACKBURN ...	"Art and Modern Dress."
*WALTER CRANE	"The Construction and Evolution of Decorative Pattern."
PROFESSOR EDMOND GOSSE	"The Place of Sculpture in Modern Life."
†L. ALMA TADEMA, R.A....	"An Address on Sculpture."
E. C. ROBINS, F.S.A. ...	"Enthusiasm in Art : its Moral and Material Significance."
*WALTER CRANE	On his picture "The Bridge of Life."

1889.

*WILLIAM MORRIS... ...	"Gothic Architecture."
*W. B. RICHMOND, A.R.A.	"The Dignity of Handicraft."
LEWIS F. DAY	"A Talk on Art and Handicraft."
*HON. HAROLD A. DILLON	"Armour."
*ERNEST RADFORD ...	"The Beauty of Useful Things."
SIR JAMES LINTON, P.R.I.	"Guilds."
C. KEGAN PAUL	"Art in Poetry."
*PRINCIPAL J. SPARKES ...	"The Potter's Wheel."

1890.

The Marquis of Ripon	"An Address."
C. R. Ashbee, M.A. ...	"Architecture as the Language of the English People." (A course of 12 lectures.)
†Henry Holiday ...	"The Artistic Aspects of Edward Bellamy's 'Looking Backward.'"
*T. Cobden Sanderson ...	"Bookbinding."
*†W. B. Richmond, A.R.A.	"Gesso."
*†T. Stirling Lee ...	"The Language of Sculpture."
*†E. Prioleau Warren ...	"Parlour Architecture."
*H. Stannus, F.R.I.B.A. ...	"Construction of Design."

1891.

C. R. Ashbee, M.A. ...	"On the Prospects of the Guild and School on Coming into its New Premises."
Sir Philip Magnus ...	"A Short Address on Technical Training to Masters and Teachers."
*Professor Hubert Herkomer, R.A.	"A Technical Talk."
*R. B. Rathbone (of Liverpool)	"Hammered Hollow Ware."
Geo. Thompson (of Huddersfield)	"The Industrial Partnership of Woodhouse Mills."
Francis Inigo Thomas...	"The Relation of the Architect to the Handicrafts."
F. H. Newberry (of Glasgow)	"Impressionism and Design."
The Marquis of Ripon	"Address on the Opening of the New Workshops at Essex House."

1892 (incomplete).

Arthur Berry, M.A. ...	"The Universities and the Masses."
C. R. Ashbee, M.A. ...	"The Teacher in the Workshop; or, How to Begin in Technical Education." (An intermediate course of 6 lectures.)
J. S. Thornton	"Slöjd."
John Gamgee	"The Relation of Skilled Handicraftsmen to Physical Discoveries."
S. Barter...	"Manual Training in Public Elementary Schools."

§ 27. Terminal Curriculum.

The Educational Curriculum, subject to terminal modifications is as follows :—

	9—11.	12—2.	5.30—7.30 and 6—8.	8—10.
MONDAY ..			Carpentry, Joinery, and Manual Training, for Teachers.	
TUESDAY ..			Carpentry, Joinery, and Manual Training, for Teachers.	Carpentry and Joinery, for Men and Boys. Advanced Course in Relief Work, Wood, Clay, Leather, etc., for Teachers.
WEDNESDAY.			Carpentry, Joinery, and Manual Training, for Teachers.	Decoration, Drawing, and Design, for Men and Boys.
THURSDAY ..		Hammered Metal Work, for Teachers. 12—1.	Carpentry, Joinery, and Manual Training, for Teachers.	Decoration, Drawing, and Design, for Men and Boys. Embroidery, for Ladies. Carving, Modelling, and Metal Work. Carpentry, Joinery, and Manual Training, for Teachers.
FRIDAY ..			Carpentry, Joinery, and Manual Training, for Teachers.	Carving, Modelling, and Metal Work, for Men and Boys.
SATURDAY ..	Carpentry, Joinery, and Manual Training, for Teachers.	Carpentry, Joinery, and Manual Training, for Teachers.		

CLASSES are also being formed in Manual Training to Teachers, at Girls and Infants' Schools, for which names are received.

COUNTRY TEACHERS.—Special courses for Country Teachers during the Easter, Whitsun, Summer, and Christmas Vacations, to qualify them for the City and Guilds examinations, are arranged. Particulars of these may be had on application to the Secretary, Mr. Frank Prout.

THE COMMITTEE desire to draw attention to the social side of the work of the Guild and School. Members are entitled to nomination in the Craftsman Club, have the use of the Garden, etc., and special provision is made for those living at a distance—meals being provided on a tariff supplied by the steward.

§ 28. Mile End University Extension Committee.

Independent of the committees given above, and responsible to the London Council for the extension of University teaching, is the Mile End Extension Committee, having its centre at Essex House, and in part guaranteed by the committees of the Guild and School of Handicraft.

Hon. President:

The Marquis of Ripon.

Hon. Vice-Presidents:

Sir Frederick Leighton, P.R.A.	Frank Dicksee, R.A.
Edw. Burne Jones, A.R.A.	Sir Owen Roberts.
Sir Chas. Russell, Q.C., M.P.	W. Frith, R.A.
	Sir A. K. Rollit, M.P.

The Committee:

C. R. Ashbee, M.A. ...	*Architect* (Chairman).
C. V. Adams	*Cabinet Maker.*
J. Williams...	*Metal Worker.*
S. Baines	*Copper Smith.*
J. J. Cameron	*Clerk.*
C. Mercer	*Painter.*
J. Gardham	*Clerk.*
W. J. Harrison	*Lithographic Draughtsman.*
J. Atkinson...	
G. D. Smith	*Metal Worker.*

C. Ballard, H. Freeman, T. Lovell, T. Wyles, W. D. Bentliff, E. Hildred, E. J. Tanner, E. Farmer, R. T. Soar, G. P. Clark, G. Howard, *Teachers.*

T. Tiley, *Hon. Sec. of the Committee.*

Part II.

CHAPTER V.

THE ELEMENTARY TEACHER IN HIS RELATION TO HANDICRAFT.

By C. P. Ashbee.

§ 29. The Guild and School to the elementary teacher.

IT is not unfitting that the second portion of this little manual should be devoted to and serve the purposes of the elementary teacher, inasmuch as one of the most important developments of the work of the Guild and School of Handicraft has been due to him, its system been adapted to meet his wants, and inasmuch as on him will devolve the main responsibilities of carrying out into practical efficiency that branch of the technical education movement which is contained in manual instruction.

Our hope here, therefore, will be to show what has been thus far done in this direction through the agency of the Guild and School, and to indicate what may yet grow out of it; to sketch for the elementary teacher, not only in London but elsewhere, a plan on which he might develop his work, and to give, as far as so limited a scope will permit, some suggestions based upon experience for its furtherance, without at the same time hampering him with too many rules or too much system.

§ 30. The elementary teacher expectant.

The position of the elementary teacher at the present day is an interesting one. He appears as a man emancipating himself from the machinery of systems. The questions which for the present trouble him—the "pensions," the "C.P. difficulty," the "Grant," the "D.'s," "Form 40," and all the other educational hieroglyphics that contain each their meaning to him—are often but evidences of a gradual emancipation; and though he sometimes forgets that the soulless ticking of the departmental clock does but symbolise the hours, even he cannot fail to note their swifter progress.

At the present moment he is agog with expectation. He sees the evidences of the technical education

movement round about him ; he feels it upon him. There are appointments and posts going ; he must get his D. and qualify. Form 40 must be further puffed out. It does not so much matter that the real thing shall be got, as that the process of Hall-marking shall be duly gone through. A small piece of tin underneath the sterling silver is of little consequence, for does not the Board consider the mark first, then the man ?

§ 31. What is harmonious education to him ?

It is not surprising, therefore, that as yet the elementary teacher fails to see the technical education movement in any of its higher aspects. The education of the hand and the eye having become to him merely a cant phrase for a somewhat narrow routine based on the teaching of Froebel, he fails to see in the development of manual instruction another effort towards any ideal of more *harmonious education.*

§ 32. His love of systems.

True, therefore, to the traditions of his training in a system that moves with all the soulless rhythm of the nineteenth-century machine, he seeks at once to systematise before the subject has been properly understood. But have we not systems of education enough, without adding to them systems of technical education and manual training? Let us understand the spirit of it first—what it is intended to do, what qualities in the pupil it is to awaken ; then let us see that we have in ourselves a certain skill of finger, hand, or wrist, that shall be our own justification for taking up the subject; and then we can set to and think as to the best ways of educating—that is to say, not *cramming in* but *drawing out* similar qualities in our pupils. The wisdom of old Ascham when he warned the Elizabethan schoolmasters against "*epitome*"—the counterpart of systems in training as understood by the elementary teachers of to-day—is applicable now, as then. It is good, he says, "privatlie for himselfe that doth worke it, but ill commonlie for all other that use other men's labour therin : a silie poore kinde of studie, not unlike to the doing of those poore folke which neyther till, nor sowe, nor reape themselves, but gleane by stealth upon other men's groundes. Such have emptie barnes for deare yeares."

Truly it is as easy to "glean by stealth" in manual as it is in classical training, and the result in either case is the same. It may not unreasonably be urged that the

§ 33. The contrasted opinion of Roger Ascham's "Schole-master" and the Board School master on these matters.

largeness of modern conditions make systems necessary, but the fact will always remain that the man must master his subject first before he epitomises it, that he can never teach it through epitomising, that graded courses are often but epitomes of the worst kind for teacher and pupil, and that the examination system and the system of training for direct results tend but to encourage this epitomising.

"That is all true," says the elementary teacher, "but I have to look to Government grants. I quite agree with Roger Ascham, but I should like to see him as an assistant master under the London School Board, with ninety per cent. to pass, instead of as the learned and cultured tutor of Queen Elizabeth. What would he do then?"

§ 34. Roger Ascham on the London School Board.

What, indeed? For my part, I think he would take stock of his surroundings, and look through the movements of the day as far as his limited position enabled him. He would recognise that a great principle, undreamed of even by him, had become an established fact —that education was compulsory and free to every English child. He would see in himself one of the humble ministers of this principle, and he would see a thousand others united with him to the same end. This grasped, he would note that many of the fundamental laws of education which he had once mapped out for the training of the young English gentlemen of the Court had still to be applied, and to every child, in a greater England; and he would set about him to inspire his colleagues and to unite with them in making this possible. He would act with them on committees, he would canvass at elections, he would inspire petitions, and plan campaigns to arouse sleeping "Boards" and awakening ratepayers. In short, he would submit to all the weary drudgery of organisation, because he saw in it a goal; and he would realise that in the elementary teacher was a force, attainable by combination, that could achieve these things. He would become militant!

§ 35. The invitation to elementary teachers to aid in establishing the "workshop principle."

It is an undoubted fact, I think, that the teacher has these things in his own hands, and that the problems of truer and more harmonious education are soluble as soon as he realises this. Indeed, the success with which many of the efforts of the Guild and School of Handicraft have been crowned, having some of these ends in view, is

as good evidence as could be needed in corroboration. It is in the belief that further successes are attainable by further combination, that the Guild and School, and more especially the elementary teachers of the Guild and School, invite the co-operation of all who might be considered as colleagues in the furtherance of its educational work, the establishment of the "workshop principle" in the teaching of art and technology, the avoidance of the divorce between higher and technical education, the effort to make education more harmonious, and the pressing of these truths—their wisdom shown by success—upon Boards and Government departments.

§ 36. The growth of the teachers' committee of the Guild and School, and the results therefrom.

It is to the committee of teachers of the Guild and School of Handicraft and their energetic secretary—elected by representation from the different teachers' classes—trained at Essex House, that many of the recent developments are due, and their origin and rapid growth testify to the work that this committee still has before it. Some record of its growth may not be out of place. Some five years ago Sir Philip Magnus, in conjunction with the Rev. S. A. Barnett, started a small manual class for the training of teachers at Toynbee Hall. This class, whose numbers at one time were limited to two members, was subsequently taken over by the Guild and School of Handicraft, and incorporated into its educational system. The class grew, and at the time of the move from Commercial Street to Essex House the members had increased to fifty. The new conditions offered to the pupils in the new workshops, and the establishment of representation from the classes on a general committee of the teachers, gave a further spur to the numbers, so that over a hundred elementary teachers are now on the books. At the same time the action of the teachers' committee in approaching the City and Guilds Institute, and the consequent establishment of the technological examination, has given a permanence to the work. Further beneficial results may be seen in imitation. Other schools have sprung up also for the training of teachers, and in some instances the methods of the School of Handicraft—not only educationally, but also in the formation of teachers' committees—have been successfully copied. It is, however, questionable whether the ultimate results can be so beneficial where the school is

in no direct connection with a workshop—where, in short, the "workshop principle" is absent. We recommend to those who are either offshoots from or modelling themselves upon us, the establishment of a guild in connection with a school, for by that means alone can the "workshop principle" be truly recognised.

§ 37. The elementary teacher shall speak for himself.

The elementary teachers, however, have their own problems to solve, their own aims to accomplish, and their own methods of going to work. Inasmuch, therefore, as the corporate voice—which it is one of the principles of the Guild and School always to give expression to—can be better left to explain itself, the following chapter, prepared by the representative committee of its teachers, will state more fully what appear to them to be the objects they have in view.

C. R. ASHBEE.

CHAPTER VI.

THE ELEMENTARY TEACHERS OF THE GUILD AND SCHOOL OF HANDICRAFT.

By the Teachers' Committee.

§ 38. The elementary teacher's prospects.

Now that technical instruction has become a practical feature in the education of this country, it is but natural that the preliminaries leading up to it should enter into the curriculum of our public elementary schools, seeing that it is in these schools the majority of the young receive their education, and especially those who are to benefit by technology. And as "all technical instruction presupposes a good primary education," it is to the elementary teacher we must look to instil a sound and thorough foundation for it.

The Education Department has recognised the necessity of this, and has laid down the fundamental principles leading up to it as part of the instruction to be given in the public elementary schools, viz., compulsory drawing, elementary science, and last, but not least, manual training. The two former have now been in vogue for some little time, but it is only lately that anything like prominence has been attached to the last, which seems to us more disciplinary and quite as educative as the other two; while, owing to its practical nature, it affords relaxation and recreation from the ordinary school courses.

§ 39. Forms of handicraft

There are several distinct ways in which handicraft or manual training may be taken up in an elementary school; thus the subjects usually comprised under the head of Kindergarten may be placed as an elementary form of manual training, and then the courses that grow out of Kindergarten—the cutting or folding of cardboard work; modelling in clay, wax, or putty; metal work at the lathe, or repoussé; or woodwork in carving, carpentry, and so forth. Or it might be started by having a series of graduated exercises, from Kindergarten upwards, and

ranging through several of the more important of these subjects. But with whatever subject we begin, or in whatever way our series be formed, stress must be laid by the teacher on those principles which manual training is meant to instil—"the careful training of the attention of the children to the use of their hands and eyes."

At present manual training is in rather a chaotic state, as no regular accepted system has been formed in this country for the guidance of managers and teachers interested in the subject, and the relative importance of the different methods that might be employed not yet determined, though carpentry seems for the nonce to be the most popular—perhaps, not only on account of its usefulness, cleanliness, and the comparatively easy equipment of workshops, as because it combines a very great number of the educational advantages to be derived from manual training.

§ 40. The "workshop principle" again.

Our principle here—though working immediately through what is commonly called English carpentry—is not so much to work on a definite system as to acquire a gradual understanding of the underlying principles in different materials, their possibilities, their application; their reason, their convenience; and we hold that when the teacher shall have trained himself in one he shall then proceed to similarly train himself in another. In this way the "workshop principle," upon which the Guild and School of Handicraft is based, comes directly home to the elementary teacher. Here, at Essex House, where two workshops are going at the same time—the Guild or practical workshop, and the School or educational workshop—the elementary teacher has the opportunity of seeing what he can see nowhere else, namely, the actual creation of things in different materials; and he can come in contact, directly and educationally, with the creators of those things—the workmen of the Guild. It cannot be denied that it is of the greatest possible educational advantage to the elementary teacher, when himself learning with a view to teaching, that he shall see—as he does here—produced under the same roof, furniture, cabinet work of the best kind, joinery, metal work embossed and annealed, brasing, gold and silver work, jewellery, leather work, modelling for architectural work, painting, designing,

and all the different forms of handicraft that serve the mother art of architecture. An insight into these things cannot but give value to his guidance of manual instruction later in the schools ; and though the intention is not to make of him a practical craftsman, it will give him the knowledge of the largeness of the subject, and define his limits as an educationalist. This larger educational view of the subject in its various branches he can acquire at the Guild and School of Handicraft, owing to its recognition of the "workshop principle."

§ 41. Shall it be the artisan, or shall it be the elementary teacher? The compromise at the Guild and School.

A slight controversy has arisen as to who should be the proper instructor of such a subject in our elementary schools—as to whether it should be the teacher of the class himself, or whether it should be a skilled craftsman well versed in all the technicalities of his trade. There is no doubt that the craftsman would be the superior of the teacher so far as the able manipulation of the tools went, and the making of actual work ; but the question is, Would his management of the boys, or his methods of imparting the instruction, be equal to that of the teacher, whose training and calling have enabled him to acquire the tact necessary for applying the most varied instruction to children in a manner most suitable to their capabilities of reception ? Again, would the craftsman bear strongly enough in mind and foster those educational principles which manual training is so essentially to teach, or would he rather be inclined to confine it to the lines of his trade? For it must be firmly borne in mind that the object we have in view is not how to teach trades, but how to train faculties. In so far, therefore, as this is the case, in so far as we have to train the children to use their hands and eyes in a manner that cannot fail to be of use to them in after-life in any calling they may pursue, in so far as the nature of the work is disciplinary, and in so far as the elementary schools are concerned only with the elements of technical instruction, we hold that it is the province of the elementary teacher to teach the child, but that it is the province of the artisan to train the teacher. In other words, the principle of the Guild and School is that the teacher shall instruct the artisan of one generation, the artisan the teacher of the other.

That the elementary teacher is capable of acquiring

the necessary skill for imparting this instruction may be well ascertained by a visit paid to those existing classes where elementary teachers are receiving instruction in this subject in order to fit them for the work. Since the development of the teachers' classes by the Guild and School, the City Guilds' Institute has —wisely, we think—taken this matter under its control. Certificates of efficiency are now granted to such elementary teachers as shall present themselves for an examination held under its auspices, and shall pass to its satisfaction. It is further required that the applicants for a certificate shall have worked through their syllabus, consisting of two courses and extending over two years; that they shall present themselves for examination at the end of each year; that a certificate will be granted for each course, but the teaching certificate of proficiency only at the end of the second year's course.

§ 42. Essex House as a centre.

The Guild and School of Handicraft—which has been in existence for some five years, and is now established at Essex House, an old eighteenth-century hall, with panelled rooms and spacious workshops and garden, in Mile End—has in a large measure been the pioneer of this movement among the elementary teachers, of whom it numbers somewhat over a hundred in its ranks. The Guild, as a co-operative society of workmen employed in the many different artistic trades above-mentioned, with Mr. C. R. Ashbee, M.A., architect, as their honorary director, is at our hand to help and guide us who speak as students of the School; and inasmuch as the craftsmen of the Guild, under the personal supervision of the honorary director, are prepared to give instruction in the School in so many various branches of work, there is no reason why manual instruction should not be further and largely developed among teachers. Here, at Essex House, with the material we have at hand, we are in a situation and ready to give tuition in decoration; drawing and design; relief work in wood, clay, and leather; modelling in wax and gesso; metal embossing, turning, and chasing; and thus pioneer manual training through an endless variety of channels.

Technical training, however, is a broad subject and needs broad treatment, not only on its mechanical, but

§ 43. The elementary teachers and the London University Extension.

also on its educational side; we have, therefore, approached the London Society for the Extension of University Teaching on the subject, with a view to applying a higher and more valuable element to the work we already do; and they have sanctioned the establishment of an Extension Centre at Essex House, and a special committee has been formed for the purpose. We are in hopes also that the London Universities' Joint Board will shortly be able to meet the wants of all our people as regards subject, and widen its lists to meet the requirements of the movement in the same way as have been done by the Universities of Oxford and Cambridge. Our hope in aiding in the establishment of an Extension Centre in conjunction with what is, in our province, already a technical training college for teachers, has been twofold—(1) to give a higher and more definite aim to the movement for technical education; (2) to apply to handicraft the wider and more liberal training of the Universities.

§ 44. The invitation to all from Essex House.

In order to make these objects of greater value to all, in order to aid further the cause of harmonious education, and manual as a branch of technical, in order to strengthen further the platform at Essex House, on which the skilled artisan and the elementary teacher can meet in common, and in order to encourage that healthy "workshop principle" in which, we believe, lies the secret of genuine training in any form of handicraft, we invite all elementary teachers, especially those in East London, to join us in our work, and by co-operation help forward a movement that will affect not only our own but future generations.

THE COMMITTEE OF THE TEACHERS OF THE GUILD AND SCHOOL OF HANDICRAFT:

C. Ballard.
A. Batty.
W. D. Bentliff.
G. P. Clark.
W. Credland.
E. Farmer.
H. Freeman.
W. Gower.
E. Hildred.
G. Howard.
T. Lovell.
R. T. Soar.
E. J. Tanner.
G. Twine.
T. Wyles.
T. Tiley, *Hon. Secretary.*

CHAPTER VII.

HOW TO START A WORKSHOP.

BY C. V. ADAMS, *Foreman and First Cabinet Maker of the Guild; Senior Wood Work Instructor in the School.*

§ 45. Beginning with a carpenter's shop.

INASMUCH as the carpenter's bench and the tools that belong to it have in all times been regarded as the foundation of a workshop, I propose in this chapter to give a general idea to the beginner of the best way to proceed in starting a workshop.

We will assume that a sum of money has been handed over by some beneficent County Council for the purpose of starting a workshop, and that the instructor is ready qualified to enter in charge of it. How most wisely to expend it will be the first question that has to be met; and unless the person upon whom this duty falls has had some experience in similar outlays, he will probably find himself possessed of many things which are of little service, and short of many things that are essential to the successful carrying on of his classes.

Of course much depends upon the amount of money at his disposal, and I in no way mean to imply by the suggestions I offer that much more money could not be spent to advantage, or that a workshop could not be started on rather less.

To make the matter as clear as possible, I shall arrange the subject under three heads :—

1. Benches, tools, etc.
2. Material.
3. Arrangement of workshop.

§ 46. Benches, tools, etc.

And in the first two I shall deal with cost. In the selection of benches much must depend upon the sum at the disposal of the purchaser; but three things must be carefully borne in mind :—

(1) That the bench shall be sufficiently large to comfortably accommodate the student.

(2) That it shall be sufficiently heavy and rigid to

reduce as far as possible the noise made by the student, and to prevent it moving or shaking when worked upon.

(3) That it shall possess a screw, or clip and stop, and be fitted with shelves or other arrangements for holding the tools not actually in use.

These requirements are most easily met by obtaining benches that will each accommodate four students; which, in addition to the advantages mentioned, are less costly, and occupy less space than single benches, besides enabling the instructor to better superintend his class.

The space provided for each student should not be less than 4ft. 6in. by 1ft. 4in.; thus a bench 9ft. long and 2 ft. 8in. wide would accommodate four students, and an approximate cost may be gathered from the following prices charged by the Guild of Handicraft for benches made by them :—

Single bench	from 18s. to £1 10 0
Bench to accommodate four students, quite plain, and fitted with wooden screws	£2 10 0 to 3 0 0
Ditto, fitted with instantaneous grip vices, shelves for tools, etc., and so constructed as to be easily taken apart and packed away when not in use	8 0 0

Higher-priced benches are sometimes supplied fitted with cupboards and drawers; but these, although very convenient and time-saving, are not absolutely necessary in starting a workshop.

From the above prices the purchaser can obtain a fair idea of the cost of benches. In the selection of tools, I must at the outset caution purchasers against buying cheap and inferior tools, for, however true it may be that the bad workman complains of his tools, it is equally true that good tools are essential for the production of good work. It is impossible, for instance, to make a clean paring with a chisel too soft to keep a keen edge, or to obtain a level surface with a plane-iron having an uneven face; and although the practised workman may detect and rectify many of the faults of cheap tools, it is hardly to be expected of the elementary teacher, and certainly not of the elementary student, and much annoyance and bad work is the result. The necessary tools and their probable cost may be gathered from the following lists, of which the

first is that recommended by the City and Guilds' Institute the second that published by the Regent Street Polytechnic, the third that recommended and supplied by the Guild and School of Handicraft from Essex House.

Single sets as recommended by the City and Guilds of London Institute :—

1 17in. jack-plane.
1 smoothing-plane.
1 14in. tenon-saw.
8 firmer chisels.
1 4½in. rosewood square.
1 2ft. rule.
1 hammer.
1 marking-gauge.
1 screwdriver.
3 gimlets ; 3 bradawls ; 1 punch.
1 spokeshave.
1 marking-awl.

These will cost from 26s. to 28s.

Where each student is provided with these, there should also be for the general use of a class :—

3 mallets.
3 24in. panel-saws.
3 oilstones and oil-can.
1 joiner's cramp.
1 set of ⅛in. letters for marking tools.
2 sawing-stools.

At a cost of about £3.

For practical work at the Polytechnic, London, it is recommended that the workshop should be furnished with the following tools :—

Double bench, 10ft.
Grindstone, 24in., mounted in trough.
Gluepot, glue, and gluebrush.
Cramp, wrought-iron ; 2 handscrews.
2 sawing-stools.
Planes—trying, 22in. long ; jack, 18in. long ; smoothing ; 6 hollows ; 6 rounds ; rebate, ¾in. ; plough, and set of 8 irons, ⅛in. to ⅝in. ; router.
Saws—Half-rip, 3 teeth per inch ; hand, 4 teeth per inch ; tenon, 8 teeth per inch ; dovetail, 15 teeth per inch ; bow.
Chisels—10 firmer, ⅛in. to 1½in. ; 4 mortice, $\frac{5}{16}$in. to ½in.
2 gouges, small and medium.
Oilstone, slow-cutting ; Arkansas slip for sharpening hollows ; oil-can and salad-oil.
Rule, twofold, 2ft.
Square, 6in. (the stock cut 45° to mark mitres) ; bevel, with steel blade ; setting-out knife.

Hammers, large and small ; mallet.
3 gimlets; 3 bradawls.
2 punches.
1 pair of pincers ; 1 pair of compasses.
2 screwdrivers, a small and medium.
Brace and set of assorted bits.
Spokeshave, small.
Gauges—mortice, marking, and cutting.

The Guild and School of Handicraft recommend and supply for a class of 12 students, at a cost of about £20, the following twelve single sets of:—

1 jack-plane.
1 9in. iron back-saw.
1 screwdriver.
1 set of 6 chisels.
1 hammer.
1 mallet.
1 marking-gauge.
1 cutting-gauge.
1 4½in. square.
1 2ft. rule.
1 marking-awl.
1 pair spring dividers.

Each set costing about £1 2s.; and a set for general use consisting of the following :—

4 trying-planes.
2 smoothing-planes.
1 hand-saw.
1 panel-saw
3 tenon-saws.
2 bow-saws.
3 oilstones.
2 mortice-gauges.
1 rebate-plane.
2 sliding bevels.
2 12in. squares.
2 wooden and 2 iron spokeshaves.
1 plough and set of irons.
1 brace and set of assorted bits.
4 12in. handscrews.
6 6in. handscrews.
3 shooting-boards.
1 mitre-board.
2 sawing-stools.
12 bradawls.
6 gimlets.
1 pair of pincers.
1 oilcan.
1 gluepot.
1 grindstone.

§ 47. Material.

As in the selection of tools, so even more in wood the experienced eye is of more service than the text-book ; but the following woods are those that will be of more general use in the elementary workshop :—Yellow pine, bass wood, American walnut, oak and beech; and I give here a slight description, such as may be of service to the teacher in the workshop, of these, together with some other of the commoner woods.

Yellow Pine grows in North America, and is there called white pine, owing to the colour of its bark. It is a straight and lofty tree, and the wood when cut is of a brownish-yellow or straw colour, the grain generally clean and straight ; it is soft and light, and easily worked ; is largely used for interior fittings and cabinet work ; it adheres to glue well, and stands well if kept dry, but is not durable if exposed to a damp atmosphere. Shrinks about one-fortieth its width in seasoning.

White Deal (*Spruce*).—This timber is from trees found in the mountainous parts of the North of Europe, in North America, and also in this country. In colour it is whiter than yellow pine, and the annual rings are more clearly defined. When planed, it has a silken, silvery appearance ; contains a large number of small hard knots ; is largely used in inferior carpentry and joinery, in match-boarding, floorboards, and packing-cases ; but, owing to its twisting and warping, is seldom used in good work. It is tough and elastic, and where free from knots not difficult to work, but not so easy as the yellow pine. It shrinks about one-sixtieth of its width in seasoning.

Bass Wood grows extensively in North America, and is identical with our lime or linden tree, grown here chiefly for ornamental purposes. It has a close grain ; is soft and free from knots ; is somewhat varied in colour, from almost white to a greenish-yellow, sometimes becoming quite green (often called in the North of England canary wood, owing to its colour) ; is largely used by cabinetmakers, and by turners and musical instrument makers.

Oak.—There are several varieties of this timber ; it is found all over Europe, and also in America. The principal British varieties are the Stalk-Fruited Oak, the Cluster-Fruited Oak, and the Durmast Oak. In

colour it is a yellowish-brown, and when cut obliquely across the medullary rays the "silver grain" gives it a splashed or striped appearance. It is strong and hard; shrinks and warps considerably in drying; is used for all kinds of joinery, and for various purposes where strength and durability are required. The American oak chiefly imported into this country is the White Oak, so called from the colour of its bark. In colour it closely resembles our own, but is sometimes of a more reddish shade; the grain is coarser and straighter, and the pores larger than the English oak, and it is not so strong or durable.

Beech.—This tree is found in most temperate parts of Europe, and is abundant in the Midland counties of England; its colour varies from almost white to yellowish-brown, and, having distinct medullary rays, the "silver grain" can be seen as in oak, but the splashes are smaller and generally closer together. It is a hard, close-grained wood, of uniform texture, and largely used by chairmakers, tool-makers, etc.

Walnut.—Of these woods those varieties in most general use may be roughly classed as European and American. The former is a native of Greece, Asia Minor, Persia, along the Hindu Kush to the Himalayas, Nepal, and China, and is cultivated in Europe up to 55° N. lat., growing best in strong dry loam. Its colour varies from a greyish-brown to black, and in the best qualities the "figure" consists of stripes of these colours alternately, and of almost equal width. It is strong and durable; used chiefly by cabinetmakers and gun-makers; stands well when dry, but warps and shrinks considerably in seasoning and drying.

The American or Black Walnut is found from Pennsylvania to Florida; it is of a brownish-slate colour, and of uniform texture, easier to work than the European species. It is largely used in this country for furniture-making and interior fittings.

Sycamore.—This tree is common in England and parts of Germany; in colour it is white when young, but darkens with age, the old trees being sometimes quite a light slate colour near the heart or centre; it is of uniform texture, close-grained, and, for a quick-growing tree, hard; it is durable when kept dry, but liable to

worms. It is used for various purposes where uniformity of texture is required, such as washing-machine rollers, cutting-boards, wooden screws, and turner's work.

Elm.—There are five varieties of this tree grown in Britain, of which the Common Rough-Leaved is considered the most durable; it is also found in considerable quantities in France, Spain, and Holland—that of the latter country being of an inferior quality. In colour it is a yellowish-brown, the sap being yellow; the grain is very porous and irregular, which causes the wood to twist and shrink considerably in drying; it is strong, tough, and difficult to split. It is usually used when wet, in which condition it is not hard to work; but if allowed to dry, it is hard and cross. It is very durable if kept continually wet or dry, the sap lasting as long as the heart-wood; it has a peculiar odour, by which it can be readily identified. It is used for piles, pumps, coffins, and by wheelwrights and boat-builders. The elm is also found in large quantities in North America and Canada.

Northern Pine (also known as Red Pine, Scotch Fir, Yellow Deal, Red Deal, etc.).—This wood is a pine that grows in large quantities in the North of Europe, and also in Scotland, the chief ports of shipment being Christiania, Drammen, Frederikstadt, Gothenburg, Stockholm, Sundsvall, Petersburg, Riga, Archangel, Memel, Dantzic, and Wyborg. Christiania "deals," viz., those shipped at that port, are for most purposes considered the best, but the best "baulks" are from Dantzic and Riga. In colour it resembles the American yellow pine, but is rather darker, and the yearly growth is more distinct. It has a strong resinous odour, and is stronger, harder, and more durable than either the yellow pine or white deal; it stands well when properly seasoned, being almost as durable as oak. The best qualities, when planed, have a bright glossy surface, while the inferior qualities have a surface somewhat spongy or woolly. It is largely used for good carpentry and joinery, and many purposes where lightness, strength, and durability are required. It shrinks about one-thirtieth of its width in seasoning.

Ash.—The common ash is indigenous to Europe and Northern Asia, and is found throughout Great

Britain. In colour it is a brownish-white, with darker longitudinal streaks, full of pores. It has no sap-wood, and becomes much darker with age, the heart of an old tree sometimes being nearly black; it is tough and elastic, warps and shrinks considerably, and if kept dry is durable. It is used by wheelwrights and tool-makers for axe and hammer handles, and various purposes where strength and elasticity are required.

The American Ash is darker in colour, more uniform in texture, warps and shrinks less, and is easier to work. It is largely used by cabinetmakers, and for making oars.

Mahogany.—This wood, although there are many varieties, may be roughly classed as Spanish and Honduras; that from Cuba, Jamaica, and San Domingo being generally known as "Spanish," while the other varieties—the chief of which are found on the banks of the large rivers flowing into the Gulf of Mexico, and on the larger islands of the West Indies—are known as "Honduras." In colour it is of various shades of red-brown, the texture being sometimes uniform, and sometimes "cross" and "figured," Honduras being best for strength and stiffness, Spanish being generally more brittle, and used only for ornamental purposes. It stands and glues well, does not shrink or warp much, and is very durable when kept dry. It is used chiefly by cabinetmakers and by joiners for interior fittings.

§ 48. General suggestions.

Of the foregoing woods, yellow pine will be found the most useful for general purposes, and in its selection care should be taken to avoid those boards which appear to have been cut from the centre or heart of the tree. Look carefully for shakes (which can be the better detected by bending the board across the grain, when the shakes will open, and are more easily seen), and get it as free from knots as possible, as not only does their presence occasion considerable waste, but the course of the grain being interrupted, causes the wood to become "cross," and tear in planing. Of the forces directing its action—how it shrinks, warps, twists, etc.—I shall have something to say in a later chapter.

The instructor will find that much time can be saved, and the wood more easily packed away, by having it sawn into scantlings of the required width at a saw-mill before being brought into the workshop; and for purposes

of exercise with the rip or hand-saw, obtain a thick plank of inferior wood, which, if lined out into narrow strips, will be ample for the instruction of a class.

The average cost of material for a class of twelve students engaged on a course such as herein suggested would be about sixpence per hour. It is supplied by the Guild of Handicraft in bundles containing 100 feet run at from 4s. 6d. to 6s. 6d. per bundle.

§ 49. Arrangement of workshop.

From our experience in the School of Handicraft, we consider that twelve pupils to one instructor should be the limit; for although a great amount of teaching may be done by the system of class teaching, the amount of individual attention and instruction necessary cannot be given if the number much exceeds twelve; and even this will only allow about fifteen minutes' general instruction, and three minutes' individual instruction, in an hour. The instructor will likewise find that if his class is too large, numerous mistakes and failures will be the result, and the demoralising effect of this is soon apparent; the pupil loses heart, and that love of the work—which is so essential to the success of his class—being absent, it ceases to be pleasure both to instructor and pupil.

In some of the classes already started under recent grants, as many as sixteen and even twenty students are being taught by one instructor. The evils of this can easily be seen. The result is that a small percentage of the most promising students—to whom the instructor has perhaps unconsciously given most attention—do fairly good work, while the remainder simply spend their time in spoiling both wood and tools; whereas, had the number been less, all might have made satisfactory progress.

In placing the benches in position, the chief matter for consideration is that of light, and the benches should be so arranged that as many students as possible shall stand facing the windows, so that their shadow shall not fall upon their work, and to avoid the necessity of turning round to catch the light under the square when planing; or where the class is held in the evening, and gas is used, the jets should be arranged with the same object in view, care being taken that the light is not too high, or over the heads of the student, so that its shadow is thrown down upon his work as he leans over his bench.

C. V. ADAMS.

CHAPTER VIII.

SOME NOTES ON THE MATERIALS AND METHODS OF THE CARPENTER'S SHOP (OFFERED EDUCATIONALLY, TO FURTHER THE TEACHER'S STUDY FOR THE SYLLABUS OF THE CITY AND GUILDS OF LONDON INSTITUTE). *By C. V. Adams.*

§ 50. The syllabus will not make the craftsman.

FOLLOWING the lines laid down in the previous chapters on the relative functions of the practical craftsman and the elementary teacher, I would wish to premise this chapter on the City and Guilds' syllabus with the definite statement that I do not consider the passing through this syllabus by any pupil, however excellently, can be taken as guaranteeing practical ability as a craftsman.

§ 51. Its use is pedagogic.

Its educational and pedagogic usefulness is, however, a separate matter, and that it behoves us here to consider; but any educational course for the training of the young in manual dexterity in the school is, and always will be, entirely distinct from the training of the apprentice in the workshop—the one is the training of the child in hand, eye, and mind generally; the other is the training of the man in a definite craft, and specially. There is also the third training, and that is of the teacher by the craftsman, so that he may teach the child.

§ 52. Three kinds of training at the Guild and School: (1) the apprentice; (2) the child; (3) the teacher.

At the Guild and School we have the three systems of training carried on coincidently—(1) the apprentice in the workshop; (2) the child in the school; and (3) the elementary teacher, also in the school, who is to be trained to teach the child. But we make a perfectly clear and definite distinction between all three; and of these, the first and most important is not considered in any way as part of the School's work or function.

§ 53. Suggestions on the syllabus.

The syllabus, then, is drawn up for the elementary teacher, and in order to train him to teach the child. With this in view it behoves us here to consider it under its different heads. Drawing comes first. Seeing that this chapter is addressed mainly to elementary teachers,

I think I may assume that the requirements of elementary drawing—to scale, plan, section, elevation, and perspective sketch—have already been met. As it may, however, be of value for the purpose of their instruction to children, the following short course is given with a view to meeting the requirements in drawing; it must, however, be remembered that here, as in the more strictly manual work, it is much less a question of what the subject is, as of how it is to be learnt.

Lesson 1. Use of compasses, rule, and scale.
„ 2. General principles of plan, elevation, and section.
„ 3. The setting out in full size some of the simpler points, such as mortice and tenon, bridle, etc.
„ 4. The setting out in 1 in., 1½ in., or 2 in. scale some small piece of framed work.
„ 5. The setting out from scale drawing to full size, for working drawing.
„ 6. The drawing of simple pieces of framed work in isometric projection.
„ 7. The translation of scales one to another.

In the matter of drawing, the teaching should be of such a nature as will enable the student to draw to exact dimensions the article he is about to construct, so that he may not only have the drawing to work from, but having given the necessary thought to his work by doing this, he thoroughly understands what he is about to do before he commences, and consequently is not so liable to make mistakes.

§ 54. Teach first in the concrete, then draw in the abstract.

To bring about this ultimate result the teacher will find his task easier, and the student make greater progress, if *in the commencement* the order of the work is somewhat reversed—that is to say, if the student shall first have some practised knowledge of the joints required in his work before being called upon to draw them. Give him the concrete first, then the abstract. For instance, if the student is to draw a box dovetailed together—or even a single dovetail joint—before he has made a dovetail, much difficulty will be experienced in getting him to "see through" the thing; whereas, had he, however roughly, first made the joint, he could under-

stand far better what was required, and a better and more accurate drawing would be the result, and in the end much time would have been saved. I do not in any way mean that the drawing, even at the commencement of a class, should be a copy of work done, or that any great length of time need elapse before the bench work should follow the drawing, but experience has clearly shown that the construction of even the simplest joints in carpentry is not readily grasped until the student has himself made them. The drawing of a joint, to a boy of average intelligence, before he understands how it is made, is something like his trying to spell a word he cannot pronounce.

§ 55. Seasoning, shrinkage, and warping of timber.

So much in seasoning, shrinkage, and warping is interdependent, that it will be best to take these subjects together.

The meaning of seasoning timber is the extracting from it of the sap it contains when felled. This end is arrived at by various processes, and the time taken depends upon the kind of timber, the means adopted, and the time of year that the tree is felled. Speaking generally, the time taken is longer in hard, and shorter in soft woods.

The weather-seasoning of timber—which is that most frequently adopted—consists of stacking the timber in a covered shed in such a position that the atmosphere can circulate freely round it. The approximate time necessary to season timber by this process may be gathered from the following table, given by Laslett:—

	Oak. months.	Fir. months.
Pieces 24 in. and upwards square require about	26	13
„ under 24 in. to 20 in. „ „	22	11
„ „ 20 in. to 16 in. „ „	18	9
„ „ 16 in. to 12 in. „ „	14	7
„ „ 12 in. to 8 in. „ „	10	5
„ „ 8 in. to 4 in. „ „	6	3

Water-seasoning consists of submerging the timber in a running stream, the result being that the sap is washed out, the time of submersion depending upon the force of the current, but from three to six weeks may be taken as an average, the timber then being taken out and dried. This process is considered quicker than the

former, but the timber loses strength and elasticity in the process.

Desiccation or hot-air seasoning is effected by placing the timber in an oven and drying up the sap. This process occupies much less time than either of the former processes, but is not considered so good or effective, as the sap or vegetable matter not being exhausted, but only dried, is apt, if at any time the timber becomes damp, to ferment and resume its fluid state. It is also expensive, and liable, unless the heat is very gradual, to crack and split the wood, owing to the exterior of the plank or log drying and shrinking before the interior.

The foregoing methods are those most generally adopted; and of these, the weather or natural seasoning is considered the best.

Trees felled while in leaf, and consequently full of sap, take longer to season, and are never so durable as those felled in the winter when the sap is down. Timber, when felled, should not be allowed to lie in contact with the earth, or it deteriorates; it should be lifted, so that the air may circulate freely all round it.

Shrinkage in timber commences as soon as the wood begins to dry, and continues as long as the wood contains a greater amount of moisture than the surrounding atmosphere. The amount of shrinkage varies with different woods, according to their growth and texture, some containing a greater percentage of moisture than others, even after being seasoned as far as possible in the air, as will be seen by the following table by Spon:—

Beech	18·6	Pine (White)	37·0
Poplar	26·0	Chestnut	38·2
Maple	27·0	Pine (Red)	39·7
Ash	28·0	Pine (White)	45·5
Birch	30·0	Linden	47·1
Oak (Red)	34·7	Poplar (Italian)	48·2
Oak (White)	35·5	Poplar (Black)	51·8

It can therefore be seen that wood, even when seasoned, is not always dry, and the shrinkage will continue, should the wood be used when in this condition, and the article when made placed in a dry warm room. This should be kept well in mind by the teacher, for should the student use wood fresh from the yard, although thoroughly well seasoned, but not so dry as

the atmosphere of the workshop, a joint which fitted when made will be loose a week later.

The warping of timber is the effect of unequal shrinkage, and may be the result of natural or artificial action.

The natural tendency of timber in drying is to warp with the round surface of the plank towards the centre of the tree, as in Fig. 1. This is caused by the outer surface shrinking more than the inner, owing to its containing a greater amount of woody fibres and consequently more moisture than the surface nearer the centre or heart of the tree ; the contraction consequently being greater, the plank is drawn hollow on that side. The shrinkage of a tree, when cut into four equal longitudinal pieces, is compared by Dr. Anderson to the closing of a lady's fan, the section when fresh-cut being as in Fig. 2, and when seasoned as in Fig. 3, little or no shrinkage taking place in the direction of the medullary rays—that is, from centre to bark.

Warping will also sometimes take place in the length of a plank ; this is generally owing to the longitudinal fibres taking an irregular course, as in Fig. 4, the plank in drying, shrinking where the length of fibre is short, while retaining almost its original length where the fibres are longer. This can be readily seen in an elm plank, which, owing to the irregularity of the fibre, is seldom straight when dry. The warping in timber may also be set up by exposing only one side of a plank or board to the influence of the atmosphere ; thus, a thin board which is not thoroughly dry will, if placed flat upon a bench in a dry warm workshop over-night, be found in the morning with only the centre touching the bench, both edges being lifted up owing to the exposed side having dried and consequently contracted, the reverse action taking place with a dry board exposed to a damp atmosphere.

This can be easily and readily demonstrated by holding a thin piece of pine before a fire, when, unless the wood is very dry, the shrinkage and consequent warping takes place so rapidly that the movement can be seen, and the reverse action of damp can be made quickly apparent by wetting the shrunken side, when the board quickly returns to its original shape.

Thin pieces of board are the best with which to

illustrate this, as, the resistance being less, the effect is more quickly seen.

§ 56 On the divers methods of using nails, screws, and glue.

Of the various kinds of nails made, those generally used in carpentry are the cut nails and brads—these are stamped out of plates by machinery. The wrought nails (which are made of rod and forged by hand), being less brittle, are used where it is desired to clench them, but, owing to their being more expensive and liable to split, are not used to any great extent.

On looking at a cut nail it will be seen that it tapers considerably from head to point on one side only, being parallel if looked at the other way ; and in driving, care must be taken that the wedging caused by the tapered shape does not take place across the fibres of the wood, or it is likely to split. A hole should be first made with a bradawl to receive it, the tool being placed, while boring, across the fibres, so that it cuts them, making a clear passage for the nail; otherwise the nail, coming into contact with the hard fibre, is apt to be turned from its course. The bradawl used should be rather less than the size of the nail midway between head and point.

In using a screw, two gimlets, or bits of different sizes, should be used—the first being large enough to allow the neck (or that part of the screw having no thread upon it) to pass freely, and bored through the uppermost piece of wood if two pieces are being screwed together, and the length of the neck if being used for any other purpose ; the second, and smaller, being the size of the core carrying the thread, and should, if hard wood is being used, take the entire length of the screw, but, if soft wood is being used, the hole may be slightly shorter. Before inserting the screw, the hole should be countersunk, to bring the head of the screw flush, a slight allowance being made for the crushing caused by the pressure of the head when the screw is tightened with the screw-driver or screw-turner—in the selection of which tool care must be taken, to see that the width of the blade at the point does not exceed that of the screwhead, or the wood round the head will be torn as the screw becomes flush.

In using glue it must not be forgotten that it is not the quantity used that gives strength, but just the reverse. The less glue left between the glued surfaces,

the better and stronger the joint becomes—a well-glued joint in the majority of woods being even stronger, and capable of bearing a greater strain, than the wood itself. The glue should not be used too thick, and, after being placed on the surfaces to be joined, should be well rubbed or pressed out again, only sufficient being left to fill the pores of the wood. In cold weather the surfaces should be warmed, to prevent the glue chilling before it can be pressed out. Glue adheres best to surfaces that are slightly roughed ; it is, therefore, usual to traverse them with a fine toothing-plane, which at the same time levels any ridges that may have been left by the trying-plane ; but this would not be done with edge-joints or small pieces.

§ 57. School management.

Under the last heading of the City and Guilds' syllabus appears the subject of school management. This I shall deal with in part only, and in part have already dealt with—the cost of equipment of workshop and arrangement of pupils having been alluded to in a previous chapter. With regard to systems of teaching, I am of opinion that any system that does not tend to make the work attractive at the same time as instructive, cannot be regarded as good, and I shall give in the following chapter of aphorisms so much of suggestive system as seems to us here needful in the instruction of carpentry and joinery. For the most part, we at the Guild and School regard too much system as a snare, and so hold that the least system is the best system, and that every good teacher makes his own.

C. V. Adams.

CHAPTER IX.

SUGGESTIONS FOR A "SYSTEM" OF MANUAL INSTRUCTION IN CARPENTRY AND JOINERY OFFERED AS A CHAPTER OF APHORISMS TO THE ELEMENTARY TEACHER. *By C. V. Adams.*

§ 58. A chapter of aphorisms.

WITH the object of giving value to the following suggestions for a course of manual instruction, I have placed them in the form of aphorisms, illustrated in each case by examples or by diagrams that may be of service to the student. The student when teaching later will be able to refer to them, and to base on them such system of instruction as he himself may devise for the benefit of his own pupils.

§ 59.

1. *All manual training shall have direct creative application.*

That is to say, the student is at the onset to be given to understand that although the instruction given will not be such as will make a skilled artisan of him, it will enable him in after-life to use it for his own amusement and benefit; and to convince him of this, he should at once be allowed to produce something as a result of his labour, instead of, as is too often the case, being kept at a number of exercises which, however good they may be, show no result, and therefore have the effect of making the work tedious, when it might have been attractive. For instance, if you set a boy to cut a number of meaningless cuts in a piece of wood as an exercise in sawing, he will commence with a certain amount of interest, which after a while he will lose, and the cuts, instead of becoming more accurate, will become less so; whereas had he made the same number of cuts with the hope of producing something as the result of his labour, the interest would have been maintained.

To anyone who has seen the evident pride and pleasure with which a boy surveys his first piece of

constructive work, and the increased interest with which he enters upon his second and slightly more difficult task, this is at once apparent.

§ 60. 2. *In manual training, a distinction must at the outset be drawn between the "creative" and the "educational." The object of the first is to turn out a good piece of work; the object of the second is to inculcate habits of skill, neatness, and accuracy.*

This can be best illustrated by taking, say, a "housed" or a "dovetailed" joint. The workman—whose object is to produce a good piece of work when finished—will not bestow what he would consider unnecessary care upon those parts which could not be seen when the work was finished and glued; whereas the educationalist should see that care, neatness, and accuracy, are bestowed upon the work all through, and that, when examined apart or in an unfinished condition, the groove in the "housing" shall be free from tears, that the interior of the "dovetail" shall not be ragged or unnecessarily cut away *inside* to give the appearance of greater accuracy *outside;* and in all work to adopt that method that calls for greater dexterity rather than that which gives quicker results.

§ 61. 3. *The endeavour of the instructor shall be simplicity of training and utility of purpose.*

For instance, by taking such joints as are used in the construction of the door, the window-sash, the table, or the drawer, the pupil can at once be shown, from the things around him, the uses to which the work upon which he is engaged are put (the evil results of bad workmanship are, unfortunately, shown easily enough), and the scientific reasons for using the various joints pointed out.

In many of the systems now being taught we find joints such as "tusk tenon," "fishing" or "scarfing timbers," etc.; these are valuable enough to the skilled workman, but are unnecessary and confusing to the elementary student. To appreciate their value, he should first have passed through a course of building construction. In fact, to begin with these, is to

begin reading the book before the alphabet is properly learned.

The use of simple joints readily applied to construction will always be of value to the pupil, and encourage him to use his leisure time in practising upon small pieces of work to supply his own wants, such as money-boxes, T-squares, pencil-boxes, etc.

§ 62. 4. *Having started from the basis of utility, the instructor shall teach the pupil the underlying scientific principles upon which utility rests.*

That is, he shall explain the principle of thrust, of tension, of strain, of adhesiveness, etc., keeping well in mind the material used—as, for instance, the power of the dovetailed joint to resist strain, at the same time explaining how the bevel, which is the source of strength, may be so increased as to become a source of weakness (a simple instance so often mistaken by the elementary student); the necessity of considering the growth of the wood, to avoid weakness through crossing the grain, etc.

§ 63. 5. *The instructor shall, while inculcating habits of neatness, accuracy, etc., and while basing his system on utility, have the fullest regard for the "constructional sense," which at the present day it is perhaps more needful to develop than any other.*

That is to say, that construction should be considered at the same time as decorative effect—as, for instance, where carving or coloured wood is to form part of the work, care should be taken that the structure is coloured or carved, not a useless piece of carving or coloured wood, which forms no necessary part of the work, added to obtain the required result, or, as is sometimes done, the useless piece of work executed without any thought being given as to its ultimate utility. A great deal of time and thought are wasted in some of the systems in use by the glueing together of elaborate but trivial patterns of pieces of coloured wood, with no constructional relation one to another, except what is given them by the glue-pot. While fully admitting the value of this for the sake of attractiveness, and its consequent use in a "Kindergarten" training for infants, the end

could be often better and more easily attained if the material were treated constructionally at the outset.*

6. *Guiding his pupil into the further and scientific aspect of his subject, the instructor shall then take his tools and show their various capacities, explaining their scientific and mechanical principles.* § 64.

For instance, he should point out the angles of the saw teeth and handles, and explain why such angles are adopted; he should explain the "set" of the saw, and why the necessity arises for it, and the result of bad or unequal "set." He should tell the reason why two irons are used in the plane, and show the proper adjustment of them; the difference between high and low "pitched" planes, and why the "irons" or cutters of various planes are fixed at various angles. He should show the use of the square and bevel, the uses of the different bits, and why, although two bits bore the same-sized hole, one is sometimes preferable to the other. All these should he show, and numerous other simple but important mechanical principles which he will have learned by careful observation during his own course of instruction.

7. *He shall here again have regard to simplicity, and in the selection of his tools choose only the simplest and most easily obtainable, rejecting such as are only used by the skilled artisan for the sake of speed.* § 65.

For instance, it is to the advantage of the workman —whose object is to obtain a given result with the expenditure of the least possible amount of time and trouble—to obtain or make many mechanical contrivances to assist him in his work, and their repeated use more than repays the original outlay; but to the teacher these tools would not only involve a considerable outlay, but would retard rather than advance the student in acquiring that dexterity of hand and accuracy of eye which should be his chief aim; besides which, as so much depends upon the pupil practising with his own tools in his spare time, the number and kind used should, where possible, be limited to those that can be

* Reduced to a routine, as it is in some instances, it becomes contemptible.—Ed.

obtained at a moderate cost. The use of hollow and round planes, for instance, and the working of mouldings other than those that can be formed without the use of special moulding-planes, as advocated in some systems, are the work of the skilled artisan, and in no way suited to the needs of elementary students.

The matter of economy in the equipment of schools is one of the fundamental questions with which the elementary teacher has to concern himself; hence he will do well to give special attention to this aphorism.

§ 66. 8. *In the same way the instructor shall then apply the principle of utility and its scientific reasons to "material" by showing its various possibilities and potentialities.*

Here the instructor can at once put into operation the principle of utility by taking care that in his selection of material he shall choose the best for the work he has in hand—that is, by supplying his pupils first with a mild, even-grained wood, easy to manipulate, such as yellow pine or basswood, introducing later on harder and crosser-grained woods, such as ash, beech, and oak, at the same time explaining the various uses to which the wood is usually put, and why, where grown, and the difference and rate of growth; taking care to introduce only one at a time, so that the pupil may by use become acquainted with and able to readily identify those he is using before others are brought into use. Where possible, he should use each for a purpose most suitable. For instance, after having used the pine or basswood for the first and more simple pieces of work—which shall teach the making of the various joints—the ash or beech should be used in making two or three simple tools; then the oak for some small pieces of framed work; and so forth.

§ 67. 9. *He shall then go further, and treat of the conditions that affect material, such as heat, damp and dry atmosphere, etc. In other words, having explained its "heredity," he shall then consider its "environment."*

Too much attention cannot be given to the conditions that affect the material of the woodworker, especially

where the execution of a small piece of work extends over a considerable period, as is generally the case with class-work; and in this matter the instructor will find during his teaching many instances where the atmosphere will have affected the work of his pupils, which will supply him with material with which to illustrate his theories. For instance, having left a piece of not thoroughly seasoned wood with only one side exposed to the air of a dry room, he will find the exposed side has become hollow, owing to the dry atmosphere having absorbed the moisture and consequently shrunk one side of the board only; this having taken place probably during the interval between the meeting of his class, a knowledge of the cause would enable the instructor to show both cause and remedy to his pupils—by reversing the sides for the same length of time, when the board would, under similar conditions, become straight again.

Then he shall explain how and why soft porous wood is more susceptible to climatic influences than hard; and, having a knowledge of the effect of dry and damp atmosphere upon his material, he shall see that in his construction due allowance is made for shrinkage and swelling, and never, where avoidable, so bind his material that such action cannot freely take place, or the result will be the bursting or splitting of the part affected. Speaking generally, the effect of heat, damp and dry atmosphere, can be easily and readily illustrated with some thin pieces of soft wood, a damp sponge, and a fire.

§ 68. 10. *Inasmuch as sequence and method in work give permanent value to utility and the scientific training dwelt upon in the above, the instructor shall have due regard to the cleaning, grinding, and the preparing of the tools. Sequence and method in these matters tend to inculcate the necessary qualities of care, tidiness, and neatness.*

The instructor must, if clean neat work is to be done, give great care and attention to his tools, and well impress upon his pupils that with dull, thick, or badly-sharpened tools, good work is impossible. For instance, it is impossible for the pupil to cut to a straight line if the saw has an unequal set, or to make a clean paring with a blunt chisel, or to plane a surface flat if the face of the plane has cast. He must, therefore,

continually overlook his tools, and at the same time instruct his pupils in the use of the grindstone and oil-stone, so that, as the tools become dull with use, they may themselves sharpen them. This is especially necessary where the pupils are young—not only with the object of producing neat work, but also with the object of preventing many of the small accidents, such as cut hands, which occur generally through the use of a blunt chisel, which—owing to the great and unnecessary force required to drive it through the wood—suddenly slips and catches a finger that has been allowed to get in front of it; whereas, had the tool been properly sharpened, little force would have been necessary, and no accident happened. Strange as it may appear to the uninitiated, the majority of cut hands in carpentry classes occur through the use of blunt tools.

§ 69. 11. *Coincidently with the above, the instructor shall impart a sound knowledge of mechanical drawing in its every application to manual training.*

The teacher will find in giving this instruction, which he has in most instances acquired previous to his course of woodworking, that the best system is to require his pupil to draw a plan, elevation, section, and isometric projection of his piece of work *from a model*,* and then make his work to the drawing; otherwise much time is lost before the pupil understands what is wanted, while he seldom sufficiently understands his drawing to work from it. This, of course, only applies to beginners; but after a knowledge of the various joints has been acquired, the working drawing should be made from dimensioned sketches.

§ 70. 12. *Inasmuch as the most valuable of all systems is that which contains as little system as possible, it should be the object of the instructor to make what system he has as elastic as possible.*

That is to say, that as the main object of manual instruction should be to educate the hand and eye, and not to impart a knowledge of how to make certain articles, and seeing that before this can be done properly

* *See* § 54.

the pupil must take an interest in and acquire a liking for his work, he should be allowed a certain amount of liberty in his choice of work, providing always that he shall in so doing acquire the necessary amount of skill and care.

To set a lad to go through a course of numbered exercises taken in rotation, and to insist upon No. 3 being properly turned out before No. 4 is attempted, can only have the effect of creating a dislike for the work, and the instructor will find his pupil giving more attention to the clock than to the bench.

C. V. Adams.

CHAPTER X.

ON A SUGGESTED COURSE OF INSTRUCTION.

By C. V. Adams.

§ 71. Joints and Exercises.

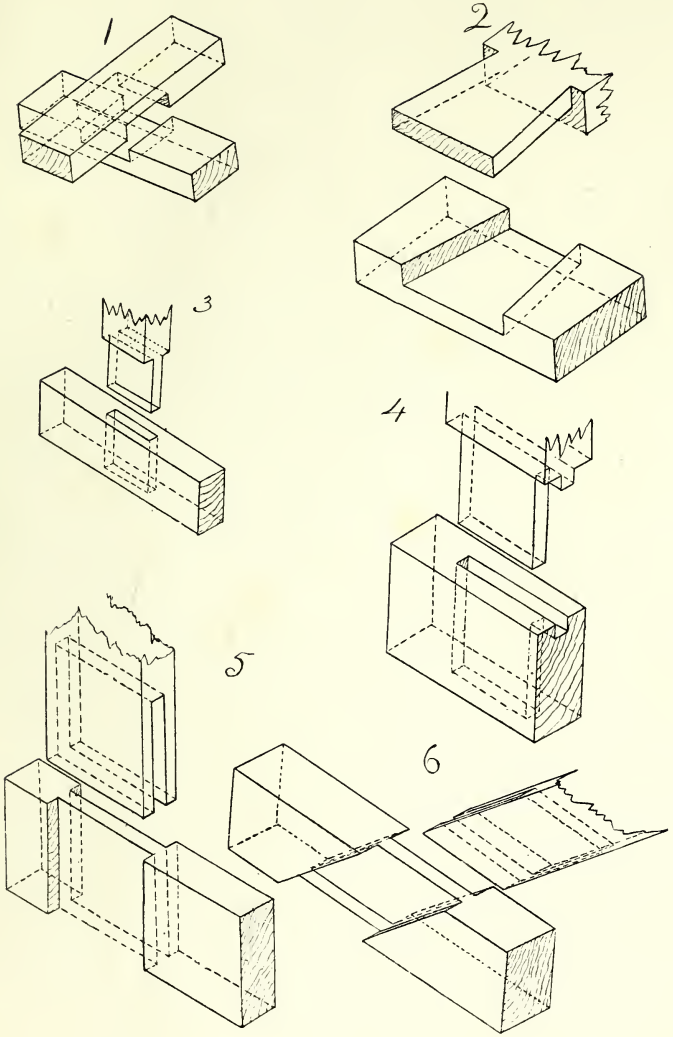
CARRYING out the aphorisms of the last chapter, but bearing in mind what is required by the City and Guilds' syllabus, I propose to give a suggestion for a course that will be valuable training to the pupil, leaving the teacher to extend or modify it according to his own ideas of what will meet the wants and requirements of his class.

I shall give, therefore, a brief explanation, taking them numerically, of the various diagrams, and the uses to which the joints shown are generally put, together with a few pieces of construction. But believing it to be absolutely necessary that they should first be made by the teacher, under the superintendence of a practical instructor, I shall not enter into minute details as to the manner of making.

§ 72. 1. *Cross-Lap* or *Lapped Halving*.—This joint is generally used where two pieces of a structure cross one another; it is, also, sometimes used at the end of two pieces, where, owing to their length, or to one being placed in position before the other (as in the case of wall-plates), a mortice and tenon is unnecessary or impossible.

§ 73. 2. *Dovetailed Halving*.—This joint is chiefly used in house carpentry, in cases similar to No. 1, but where the pieces do not cross, and the end of one piece only has to be fixed to the other; it is also made with a half dovetail, with a wedge driven in at the straight edge. It is not largely used, owing to the likelihood of shrinkage taking place, when, if a pulling strain is applied, the joint "gives."

§ 74. 3 and 4. *Mortice and Tenon*.—This is one of the most common joints in joinery, being used for all framed work, such as doors, sashes, etc. The diagram No. 3 shows the most simple form, where the joint is at the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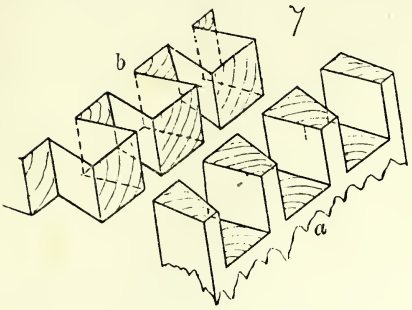
end of one piece only—No. 4, the haunched tenon, being used where the joint is at the end of two pieces. When the rail which carries the tenon is wide, it is divided into two or more tenons, a space being left between each, thus giving less wood to shrink and allowing more wedges, the mortice in each case being long enough on the outside of the frame to admit two wedges to each tenon. In cabinet work, where appearance as well as strength has to be considered, the tenon is seldom made to pass through the stile, in which case it must be made to fit tighter, and be forced into the mortice with the aid of a cramp.

A "barefaced" tenon is formed by cutting a shoulder on one side of the tenon only.

§ 75. 5 and 6. *Bridle* or *Fingered Joint.*—This is the reverse of a mortice and tenon, and is used in cases where for the sake of strength, and to ensure straightness, it is desirable to keep the horizontal piece or rail entire, but at the same time to show the perpendicular piece or stile running through; it is also adopted, for instance, in the construction of a form or table having six legs, when the rail under the seat or top should be in one length, with the square of the centre leg running through.

§ 76. 7. *Common Dovetail.*—This joint is almost too well known to need description; it is used to fasten the angles of carcase work, from the machine-made packing-case upwards. The size of dovetail and pin varies according to the quality of the work: the greater the number, the longer the time required in making; it is, therefore, difficult to apply any general rule as to size; but, to secure the greatest amount of strength, the pin on part *a* should never exceed half the size of dovetail on part *b*, and may be decreased according to taste. The angle should not be too great, or the points are apt to break off while being driven in; the joint must be made to fit tight, and be driven home with a hammer, a piece of wood being placed over it to prevent the hammer bruising, and to ensure even driving.

§ 77. 8. *Lap Dovetail.*—The principle of this joint is the same as No. 7, but it is used where it is desirable that the joint shall show on one side only, as in the case of a drawer-front. There are also other varieties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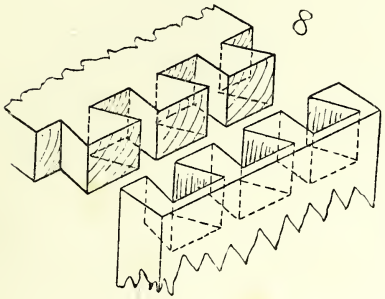
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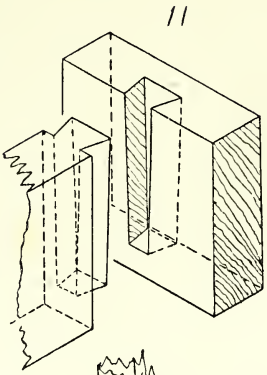
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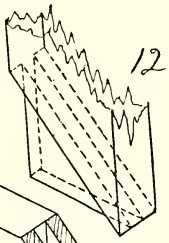
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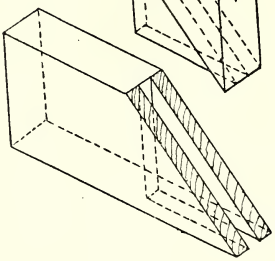

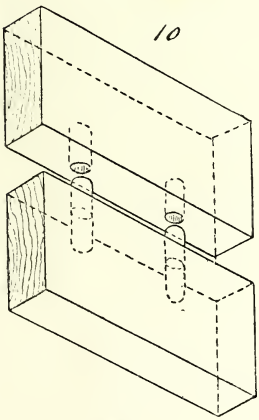
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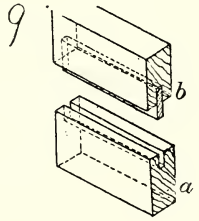
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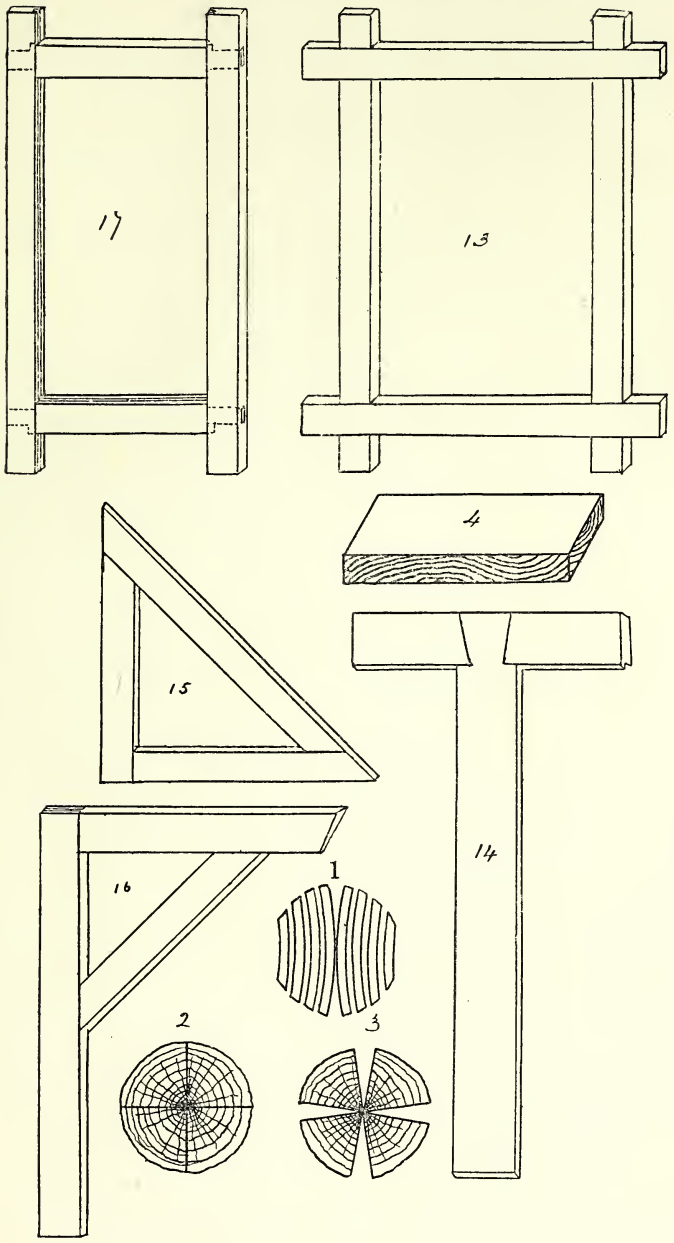
of carcase dovetail, such as secret and mitred dovetails, but these are not likely to come within the requirements of the elementary teacher.

§ 78. 9. *Tongued Joint.*—This is one of the processes adopted to give greater strength in the joining of two edges, a narrow groove being ploughed in each edge, and a "tongue" or narrow strip of wood the reverse way of the grain being inserted. A somewhat similar joint, called a "matched joint," is made with a pair of planes specially constructed, one of which grooves piece *a*, the other rebating both sides of piece *b*, leaving the tongue standing; but this is more generally used for excluding dust or draught, owing to the tongue being much weaker than in the "tongued joint," and is seldom used when the joint is to be glued.

§ 79. 10. *Dowelled Joint.*—This is another method of giving additional strength in joining two edges, and is more frequently adopted by cabinet- and chair-makers than joiners. It is made by boring corresponding holes in the edges to be joined, and inserting a hardwood pin, the joint then being cramped together; it is also sometimes used instead of a mortice and tenon, especially by chair-makers, being quicker and in some cases stronger.

§ 80. 11. *Housing.*—Simple housing in joinery consists of inserting the whole of the end of one piece of wood into another without shoulders. A dovetail housing is formed by cutting a dovetail the whole width of the wood, the dovetail showing on the edge, as in diagram. By adopting this method of fastening, the dovetailed piece will resist a pulling strain; otherwise it must be secured by nails or screws. A "tongued housing" is made by inserting one-half only of the thickness of the piece, in much the same manner as a "barefaced" tenon; in each case a shoulder is sometimes cut on the more exposed edge to give a neater appearance.

§ 81. 12. *Open Mortice and Tenon.*—This joint closely resembles the ordinary mortice and tenon, No. 3, but differs in so far as the mortice is cut down with the saw in the same manner as the tenon, the tenon being exposed on the edge as well as the end. When the shoulders are cut across at a mitre, as in diagram, it makes a strong and useful joint in moulded framing.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§ 82. Exercises.

13. An oxford frame, using joint No. 1.

14. T-square, using joint No. 2, and an exercise with the rebate-plane.

15. Set-square, using joints Nos. 5 and 6.

16. Shelf-bracket, using joint No. 3.

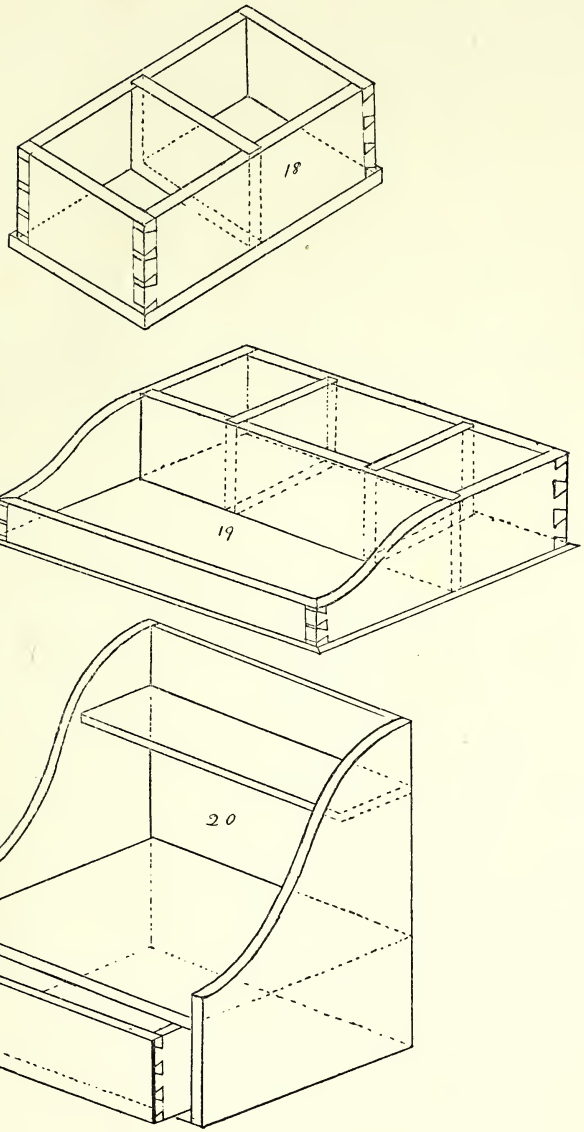
17. Door-frame, using joint No. 4, and exercise with plough.

18. Nail-box, using joints Nos. 7 and 11.

19. Pen-and-ink tray, same joints—with simple exercise with bow-saw and spokeshave.

20. Hanging bracket with drawer, using joint No. 8; exercise in ploughing and shaping.

C. V. ADAMS.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CHAPTER XI.

ON RELIEF WORK IN WOOD, CLAY, PLASTER, WAX, GESSO, METAL, LEATHER.

By John Williams,

Metal Worker and Carver, Senior Instructor in the School of Handicraft.

§ 83. Forms of relief work

THE following short articles contain suggestions on some of the subjects which, educationally, we may class as advanced courses in manual instruction.

In a small book such as this it is not possible to give more than a few ideas on each subject; but I have given those which have been found of most use in conducting the classes of the Guild and School in such various materials as wood, clay, plaster, gesso, wax, leather, or metal.

So much depends upon the character of the class, the capability of the teacher, and the neighbourhood in which the instruction is given, that it is impossible to offer more than suggestions on each subject, leaving the instructor to work out the educational destiny of each class according to the scope and possibilities to hand.

§ 84. The necessity of an understanding of design.

As a general principle applicable to all, however, I would specially call the attention of instructors to the necessity of good designs, and, I may add, of having some power or sense for design themselves. So many classes, which would be otherwise most successful, fail from this reason—technique is put first, and to design is given a secondary place. The contrary should be the rule. See that the designs from the first are good; and although the work may be rough, rude, and unfinished, yet it will be on the right lines, and in good time the technique will come.

Encourage the pupils therefore to design for themselves when they can; but this should be done with discretion, and they should be taught to feel the difference between good and bad designs. It is quite impossible to design well, or produce anything which is at the same

time original and good, without knowing something of what has been done before.

To those in London a visit, under wise guidance, to the museums, especially at South Kensington, will provide the best of all lessons, as it will show many excellent examples of old treatments of all the subjects touched upon here. At the Guild and School of Handicraft also could be seen specimens of the way in which we have treated various materials, working in many cases in the old methods, but trying as far as may be to put into them such ideas and variations as seem applicable to present needs and modern ideas.

§ 85. Unity and creativeness in class-work.

Where it is possible, it is also good to get the different classes to co-operate in doing some piece of work which shall be the united work of two or more of the classes.

The carpentry class, for instance, might make a simple cabinet; the carving and gesso classes decorate it; the repoussé class might supply the metal work; and so on. By thus working in practical unanimity the pupils will learn that idea of the "oneness" of art and craft which is beginning to be understood nowadays, and which at the very outset it is wise to encourage; and they will be helped also to the practical understanding of the application of design to material in every possible variation.

ON WOOD-CARVING.

Wood-carving is, next to carpentry, the most general and popular of the subjects included under manual instruction.

§ 86. Tools and appliances for wood carving.

If the class is held in the same place as the carpentry class, the same benches may be used, except that they must be made higher. This may be managed by having blocks of wood made to fit under the legs of the bench, so that the height from the ground to the top of the bench averages about 3 ft. to 3 ft. 4 in., according to the stature of the pupils.

Assuming that the benches are provided, the outlay for a class of, say, nine pupils—which is as many as may conveniently be instructed—will be computed on the following basis:—For each pupil, seven tools, the most useful to commence with being those shown in plan on

page 81 ; these will cost about 6s. Then some appliance for fixing the work while being carved ; the most useful is the carver's screw, as shown in the same diagram—this costs 3s. 6d. Other cheaper methods would be by wooden handscrews or G-cramps, but neither are so useful as the screw.

For general use the class would require some two or three dozen of assorted tools of different curves and sizes to those held by each pupil ; a few oil-slips (Washita or Turkey), at about 1s. each, and of different shapes to fit the insides of the tools, and a small Arkansas slip for the very small tools, veiners, and parting tools (which require a very keen edge) ; and, finally, a piece of buff leather, with a little tallow and fine emery worked into it, to give a keener edge to the tools after they have been sharpened on the oil-slips.

§ 87. Suggestions for method in teaching.

I find it best, as a general rule, to start beginners with a small panel in pine—say, about 18 in. by 4 in. by $\frac{3}{4}$ in.—with a very simple design, which may be cut down and grounded out to about $\frac{1}{8}$ in. in depth, and with very slight or (if with very elementary pupils) no modelling. If this is satisfactorily executed, another pine panel may be given, but with more relief and modelling in it.

After this, a panel in one of the harder woods, such as oak or walnut, may be tried (oak preferably, if the class is held in the evening, as the dark woods are more difficult to see by artificial light), and the pupil may then be gradually allowed to proceed to work in higher relief—which is of necessity more difficult—until he may, perhaps, reach work in the solid, such as a pew-head or finial, or a lion or piece of bold ornament, which is carved from the block and has no background, but is modelled throughout.

This approaches to wood sculpture, and it is scarcely likely that any pupil will reach such a stage as shall enable him to carve anything more than moderately high relief work in panels, etc.

The instructor should next give attention to the getting out of the background, which is generally a stumbling-block to most beginners, because the pattern has not been cut down sufficiently firm and sharp ; and he should impress on the pupil the necessity of getting

it out clean and to the same depth throughout, and although going over the background with a stamp or punch—which can be made of a large nail filed into small points at the end—to a great extent helps to hide any defects in the depth or in the cleanness of the cutting; yet there are occasions in which it is impossible to do this, and the background must be left clean and smooth.

The instructor will also have to see to the sharpening of the tools, as much depends on this, it being impossible to make a clean cut in a piece of soft wood if the tool is not perfectly sharp. The pupils, too, should be encouraged to endeavour to sharpen their tools themselves; but for some few lessons it will be necessary for the teacher to give a little attention, even after the pupil has done his best to put a keen edge on his tools.

The most useful and easily-carved subjects for classes will be panels for doors or cupboards, chair-backs, small brackets, and, after a little practice, bread-plates, bellows, picture-frames, and many other things will suggest themselves; but so much depends on the ability and growth of the class.

It would be well, as far as possible, to make the carpentry and carving classes work together; by this means a pupil may learn the constructional part of the work in the carpentry class, and then finish by ornamenting with carving what he has already made.

I have found it a good plan with very small boys to give very simple designs, such as can be outlined with a small veiner, similar to some of the German and Italian work in South Kensington, the advantage being that if the work is not satisfactory the surface may be planed off, removing the pattern, and leaving the wood fresh for another attempt. This would apply only to boys from about nine to thirteen years old, after which age they may be expected to begin on a small panel, as previously described.

§ 88. Woods for carving.

The most useful woods for carving are pine—very soft and clean to work; oak, which varies, but on the whole is one of the best woods to use; walnut, the most general in use being American or black walnut—English and Italian walnut are higher in price, but very beautifully-marked woods. Lime and pear are clean-cutting,

whitish woods, with very little grain, and are very largely used in high-relief work. Bass wood is of a greenish hue, and varies; it is very soft, but very often coarse-grained, gritty, and apt to split. Mahogany varies, but on the whole is a good wood for carving. Ebony, box, etc., are very hard woods, and are scarcely ever used except in professional work.

CLAY MODELLING AND CASTING IN PLASTER.

§ 89. Tools and appliances for clay modelling.

Clay modelling is perhaps the most important subject of the advanced course. It has the advantage of being at the same time the most economical. The only expense need be the clay (one hundredweight at 5s. or so from Doulton's or Stiff's at Lambeth); a few boards on which to model, about a foot square, one inch thick, and clamped at each end; and some tools which may be made, if necessary, by any member of the class. (A few pieces of boxwood rasped roughly into shape and finished off with glass-paper are all that is necessary.)

I give at page 81 a few of the tools most in use. They vary from $3\frac{1}{2}$ to 12 inches in length, 6 or 7 inches being the most general size.

As a first exercise a simple leaf form such as occurs in many examples of Gothic work is as good as anything, and this may be modelled almost entirely by hand.

The instructor should, in fact, discourage the use of tools, and make the pupil rely upon the fingers—and especially the thumb—for the bulk of the work, and the tools should then be used to supplement them, and to put in such modelling as may be too small for the fingers to do.*

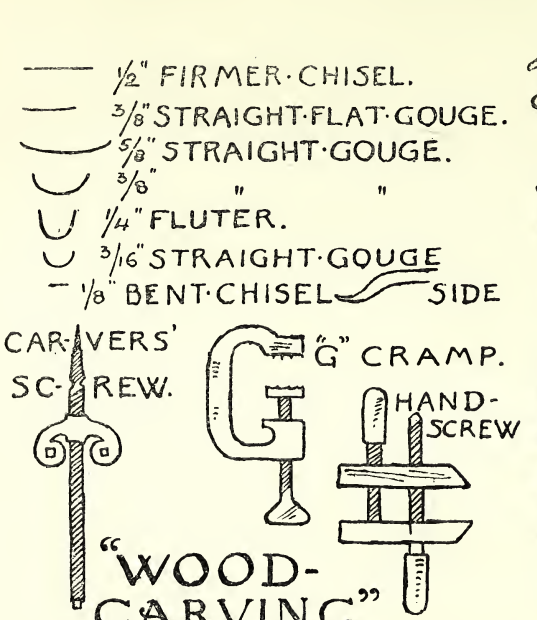
§ 90. Clay for casting.

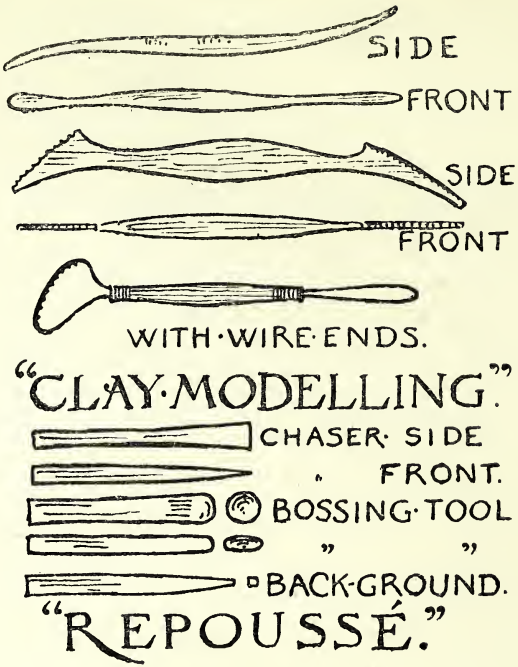
After the pupil has passed the elementary stage, and can model a small piece of ornament in fairly high relief—a shield or a boss—it is advisable to allow him to make a cast of it.

§ 91. Waste mould.

The simplest method is the waste mould. The processes of this are as follows:—Slightly moisten the

* *See* the report of the practical lesson of Mr. W. B. Richmond, A.R.A., to the boys of the Guild and School in May, 1890. *See* also Vol. I. of "Transactions of the Guild and School of Handicraft."


½" FIRMER·CHISEL.
⅜" STRAIGHT·FLAT·GOUGE.
⅝" STRAIGHT·GOUGE.
⅜" " "
¼" FLUTER.
3/16" STRAIGHT·GOUGE
⅛" BENT·CHISEL
SIDE
CARVERS' SCREW.
"G" CRAMP.
HAND-SCREW
"WOOD-CARVING"


SIDE
FRONT
SIDE
FRONT
WITH·WIRE·ENDS.
"CLAY·MODELLING."
CHASER· SIDE
" FRONT.
BOSSING·TOOL
" "
BACK·GROUND.
"REPOUSSÉ."

model, and also the parts of the board round it. Pour a small quantity of water into a basin, and mix with it a sufficient quantity of ink to give a dark tint. This will form the inner coat of the mould, and is coloured in order that when chipping the mould away the pupil may know, by the presence of the dark plaster, that he is near the model, and be careful not to chip too hard.

To the mixture of ink-and-water add gently plaster-of-paris until it reaches the surface of the water; stir this well together with a spoon, until the plaster forms a creamy mixture without bubbles.

With the spoon pour this over the clay model until every part is covered to about a quarter of an inch in thickness, and blow the plaster into any place that it does not run freely. In a few moments this will set quite hard.

Take a larger quantity of water, but without the ink, and mix plaster as before, except that in this case only the coarsest kind need be used; and when mixed, cover the inked plaster until it is about two inches thick all over. When quite dry, put a thin knife-blade between the edge of the plaster and the board, when the model and mould may be separated from the board, and the clay model picked out from the mould.

Carefully wash the mould inside with water and a brush, to remove any particles of clay that may be left. Mix a sufficient quantity of fine plaster as before, and fill the mould to the top.

It is best to leave the work for a few hours before removing the case, which is done with a hammer and a blunt chisel, care being taken when the dark plaster appears. If this is carefully done, the cast will be uncovered, and will be an exact copy in white plaster of the clay model.

Should any pieces of the plaster copy get chipped off, they may be mended by damping the place and filling with plaster which has partly set; afterwards they may be scraped and glass-papered until they coincide with the surrounding portions of the copy.

The cast may be improved in appearance if, after it is quite dry, it is coated with a mixture of hot paraffin wax.

§ 92. Piece-mould.

A piece-mould is used when a model is largely undercut, and when it is necessary to take several copies

of the one model; but this will scarcely be necessary in class-work.

An elastic mould is useful sometimes to take several copies of work which does not contain much undercutting. Elastic mould.

The method is exactly the same as waste moulding, but the cast when finished is coated with oil or lard.

Take a pound of good gelatine, and soak in about a pint of water, and melt in a saucepan. When hot, add half an ounce of melted beeswax, and stir well together. Pour this mixture over the oiled cast, placing it in a wooden frame, like the four sides of a box, about two inches larger than the cast, and about half an inch more in height than the highest part of the cast, to prevent the mixture from spreading.

When this is dry, it may be pulled away from the cast and filled with plaster, which may be removed when dry, and the operation repeated as many times as copies are required.

§ 94. Suggestions for the conduct of the class.

To make the class a success, it is necessary to have a collection of good casts to copy until the pupils have advanced sufficiently to design and carry out any work without their assistance. It will also be necessary to see that the clay is kept moist and in good condition, the best receptacle being a wooden box with a lid and lined with zinc.

Work may be kept in proper condition while in hand by coarse flannel cloths kept moist.

The quantity of work that may be executed in clay is almost unlimited, seeing that modelling forms by far the most important part of the sculptor's work, as any object to be executed in marble or bronze has generally first to be made in clay.

In terra-cotta the work is modelled direct in the clay, and then baked.

It will be found a great assistance for any who contemplate doing any difficult work in wood-carving to experiment first in clay, as it assists very greatly indeed in giving a good idea of the different reliefs required, so that a pupil may, when in doubt as to any piece of work he has in hand, get the approximate effect very quickly in the clay. Here, again, the pupil will get to learn something of the unity of the arts.

WAX MODELLING.

§ 95. Tools and appliances for wax modelling

Wax modelling, being closely allied to working in clay, may be carried on at the same time as one class.

The uses to which it can be put being so much more limited than clay, prevent its becoming very generally applicable. It is, however, extremely useful to those who work in metal, as it forms the basis of nearly all the patterns for fine casting. The material required is a little modelling wax—a dark grey or red is a useful shade—price about 3s. 6d. a pound; it may be purchased at most artists' colourmen.

The tools are the same shape as for clay modelling, but very much smaller. They are usually made of bone, knitting-needles filed into shape being as good as anything.

The wax should be applied in small pieces and worked into shape with the tools; the work, being finer in character than that in clay, will require a more delicate finish, and care should be taken, if it is contemplated to have the work cast, that no places be undercut, or it will not pull from the mould without damaging and spoiling the fineness of the casting.

Wax modelling is useful in designing for jewellery, and in conjunction with repoussé work for handles of doors, goblets, etc.

If any piece of class-work is cast in metal, the instructor should see that the cast is finished as far as possible by the pupil, and that the surface on which so much of the beauty of the work depends is not removed.*

Should the wax model get hard by keeping, it may be softened by applying a little warm water, or it may be worked upon if the tools are made hot by placing them in boiling water for a few moments.

ON PLASTER AND GESSO.

§ 96. Tools and appliances for plaster, stucco, or gesso.

Many of the previous remarks will also apply to the subject here treated, but I wish now chiefly to deal with

* In the experiments in silver and gold executed from Mr. Ashbee's designs, and under his direction, by W. Hardiman, apprentice of the Guild, the object has always been to retain the skin of the metal, preserve the tool mark of the wax, and prevent the oxidisation of metal that is ordinarily chased and treated with the buffers. The silver, gold, and jewellery work may be seen at Essex House.

the different methods of working plaster in its various combinations—such as gesso, stucco, etc.—and in a less mechanical manner than exists in casting, and the like.

If, instead of mixing our plaster with water, we mix it with a solution of weak glue-and-water, we shall find that it takes longer to set hard, and therefore enables us to work with it more readily than we could in the other method in which the glue was excluded; and if we may add to this some tow or cotton-wool, we have a material with which we may model with ease, and which when dry will be, by the action of the tow, extremely tough.

This is, in fact, the same as used by Mr. G. F. Watts for the models of his great equestrian and other statues, and also by Mr. W. B. Richmond, and of which he gave practical examples in his lecture at the Guild and School on gesso.*

Gesso is composed of glue, resin, linseed oil, whitening, and water. The best way is to take six parts of melted glue, four parts of raw linseed oil, and one part of powdered resin, and mix the whole well together in a saucepan over the fire—great care being taken that it does not boil over. This—which we will call the composition—is then put into a strong bottle with a glass stopper. Mix together whitening—gilders' is the best—and water until they form a mixture of the consistency of cream, and add about one-third of the composition. It is not advisable to mix more than is required at one time, as, when the composition is added, it soon goes bad, and must then be thrown away. In winter-time it will be necessary to warm the composition, as it sometimes gets hard in the bottle.

§ 97. Methods of using gesso.

The gesso having been prepared, take a panel of wood, on which some polish, lacquer, or raw linseed oil has been rubbed, and with a long-haired brush †—preferably of sable, and known as a "crow sable rigger"—draw the design required, using the gesso much in the same way as if it were thick paint. It should be fluid enough to

* *See* "Transactions of the Guild and School of Handicraft," Vol. I. *See* also the recipes and notes by Mr. G. F. Watts, Mr. Walter Crane, and the old ones of Raphael and Giovanni da Udine, given in the same book, or separately issued.

† I find it more handy to use a woodcock's pinion.—Ed.

flow from the point of the brush, and when dry should resemble ivory in colour. If it dries white and chalky, add more of the composition; or if transparent and waxy, more of the whitening-and-water should be added. The gesso should be stirred together with a palette-knife occasionally while using, and more water added if it becomes thick.

After the first coat of gesso has been painted on and is dry, those parts which are required to be more prominent may be repainted, and so on, until the required relief is obtained—the effect when finished depending almost entirely on how the pupil has used his judgment in determining the different reliefs required.

If work is done on a large scale and in high relief, the gesso may be placed on in fairly large quantities with a palette-knife, and modelled after with the brush; but this must be done with discretion, as it has a tendency to shrink and split off if put on in too large quantities at one time; so that it is better to give two or three small coats than one large—the time between each coat varying from one to two hours.

The gesso may be also improved by a judicious use of the small modelling tools used in waxwork—to put in a few touches here and there, and sharpen the work. Some of the background tools used in leather or repoussé work will also come in useful occasionally; but these ought only to be employed when the gesso is almost quite dry.

§ 98. The application of colour and gold to gesso.

If the gesso is left quite plain, it will be of a soft creamy tone, but it is generally treated with colour. The simplest way is to take a little oil colour—the ordinary artists' tube colour is the best—thinned with turps, and lightly applied with the finger-tip; this will give a variety in tone, and improves the look of the work. The parts to be gilded should be painted with japanners' gold size, thinned with a little turps or boiled linseed oil. When this is very nearly dry—which will be in about one or two hours—so that when touched by the finger it is very slightly sticky, apply the gold leaf. The best for this purpose is known as "transfer gold," and adheres slightly to a sheet of tissue paper, from which it detaches itself when placed upon the sized surfaces

of the work. By the use of this the trouble of gilding by the ordinary gold leaf is avoided.

The gilded surfaces may be glazed by means of transparent oil colour—such as raw sienna, crimson lake, prussian blue, gamboge, etc.—thinned with a little turps. On many of the old Italian cassones the surface is carved and covered with gesso; the whole is then gilded, and the various portions glazed with different transparent colours as described. Many good examples of this style of work may be studied in South Kensington Museum.

Gesso work may be introduced into classes for designing and drawing, and also as a variation from clay modelling. Among the many articles on which it may be used may be mentioned picture-frames, panels for furniture cabinets, or doors; and in conjunction with carving, as in the old Italian examples.

ON EMBOSSED OR REPOUSSÉ METAL WORK.

§ 99. Tools and appliances for embossed work.

This is also a very popular and successful subject for a class, and generally produces very satisfactory results. The method used in teaching metal work at the Guild and School of Handicraft classes differs from that generally adopted, as we use a block of lead instead of pitch for elementary work.

The metals most in use are copper and brass—iron, pewter, and steel being unsuitable, except for professional work. Silver, although very pleasant to work, is too expensive for general use. On the whole I prefer copper to brass, on account of its better colour and greater ductility. The most useful thickness varies from 18 to 24 Birmingham wire gauge, and this will cost from about 1s. to 1s. 6d. per square foot.

The tools consist of tracers, punches, and background-tools about $3\frac{1}{2}$ in. long; and although for fine and delicate work—such as is suitable for silver—it is necessary to have a large and good number of tools, I have always found that a chaser, one or two bossing tools, and a background-punch are all that is necessary for carrying on an ordinary class.

The lead should be about six inches square and an inch thick, and a hammer—such as size No. 0 or No. 1 joiner's—will be required.

§ 100. Methods employed in embossed work.

The pupil should be given a small piece of copper, and placing this on the lead—using the chaser in the left hand, and held nearly upright and in very much the same manner as a pen—endeavour by a succession of slight taps with the hammer to mark a continual line. As soon as he can manage this, a simple design such as a fish, with few and well-curved lines, should be given. When this is chased, it should be turned face downwards on a circular leathern pad about six inches in diameter, stoutly packed with fine sand ; and with a bossing tool and hammer raise the surface of the fish ; then, turning the metal back again on the lead, with the background tool work over the whole of the ground between the pattern. After this the metal should be turned face downwards on the lead, and the different details, as fins, scales, etc., may be chased in or put in with suitable punches.

A door-plate makes a very good example for the next piece of work ; after which a circular plate, about twelve inches in diameter, might be attempted. In this case the border and centre may be finished before attempting to lower it into a dish form. This will best be done by using a round-headed hammer or mallet, and gently beating the unworked space between the centre and the border on the leathern pad—taking care not to distort the shape of the plate, but straightening it from time to time during the process of lowering. Should the metal get very hard with hammering, it may be softened by heating to a cherry-red, and cooled by dipping in water, or by waiting till it gets cold.

When the pupil has reached this stage, he may be put to do finer work on pitch, if thought well.

In this case the metal must be thinner than before, and the lead substituted by a mixture of two parts Swedish pitch to one part of plaster-of-paris—or, preferably, ground bath-brick and a small quantity of tallow, all melted together. If too hard, add more pitch and tallow ; or if soft, add more plaster.

The degree of hardness will vary according to the weather, and allowances made. The pitch may be placed on a piece of board or in an iron tray or bowl.

The chasers will also be much smaller, some only about one-eighth of an inch long on the face, while small chasers

of various curves are used in order to more easily trace any intricate lines. The hammer, too, must be small, with a very thin and flexible handle. The method used will be the same as before, except that the metal will be placed on the pitch. This is best done by slightly warming the metal, and rubbing a very little sweet oil on the under side of it, which will cause it to adhere more closely to the pitch. After the design is chased, the work must be stuck face downwards on the pitch, and the larger surfaces bossed while the pitch is still soft, the small parts being left till it is cold. Then the work must be put again on the pitch, and worked over the face, putting in the background with fine tools, and tooling over the surface to give a texture to the work if required.

Silver will be worked in the same way, but requires very delicate treatment to look well.

The instructor should try, as far as possible, to arrange that the pupils may do such work as they can finish throughout. The effect on a class of sending the work out, to be touched up, polished, and made up into different articles, is very injurious.

In the case of door-plates, circular plaques, etc., it should be quite easy to finish them throughout; while with a few copper rivets and a little ingenuity, sconces and even simply-designed coal-boxes, fenders, lamp-holders, and the like, ought to be quite possible; while in conjunction with the leather work, hinges and metal corners of book-covers, belt-fastenings, and coat-clasps could be made by those who are advanced to the more delicate class of the work.

ON EMBOSSED LEATHER WORK.

§ 101. Tools and appliances.

Leather work has been used largely as a material for class instruction, but with small success, owing to the general want of understanding for design in its application to this material.*

* The modern revival of the leather industry began in Hamburg with Georg Hulbe, a German workman, who now employs some hundreds of carvers, modellers, etc., in the production of leather work. The Guild and School some years ago imported from Germany the tools, appliances, and methods.

The tools required are comparatively few—a knife for cutting the outlines, a small pointed steel tool round at each end, and a steel modelling tool similar to the curved wooden one shown on page 81.

The leather should be good ox-hide with an even grain, although as practice for beginners a cheaper leather might be used. The design is first traced on the leather, which must be kept moist whilst working with a sponge and a little water. The outline must then be cut round with a knife, which is held almost upright. In many designs it will be an improvement if ring tools, the same as are used in repoussé work, are used for berries and any small circular shapes.

After the outline has been cut with the knife, it must be gone over with the pointed tool; this will enlarge and widen the cut already made.

With the steel modelling tool the different markings in leaves, stalks, and other parts of the design, may now be put in; and after this the background, which may be quite plain, using a smooth tool as at page 81, and a small hammer. Another form of tool is a small star, while a very effective background is formed by a small ring tool about one-sixteenth of an inch in diameter, and placed close together on the leather, forming a series of little beads over the whole ground.

If the work is in very low relief, as in chair-backs and seats, it is now finished. In many cases, however, it greatly improves the appearance of the work to make certain parts of the design in higher relief; in this case, turn the leather face downwards over a small hole cut in a block of wood, or circles of leather of about the same size as the boss required, and with a bossing tool (*see* p. 81) and a hammer, raise the leather to the height needed. A mixture of bran, plaster-of-paris, and glue, may then be placed at the back of the raised portions, and a piece of tough brown paper or thin calico pasted over the whole of the back of the leather to keep the mixture from coming away.

The leather may be left quite plain, but it very often improves the look of the work if it is coloured and gilt. The method of colouring is very much the same as that used in gesso work, while very many valuable hints may be obtained by a study of some of the Italian, Spanish,

and Portuguese chair-backs and hangings at South Kensington.

The most appropriate work for a class consists of book-covers, ladies' belts, chair-seats, purses and cases, while very advanced pupils may even carry out such a piece of work as the hangings for a room.

John Williams.

[The colour is best rubbed in with the hand ; with oil, white should be avoided, and opaque colours applied in the first instance on the ordinary cow-hide will not adhere.—Ed.]

CHAPTER XII.

SUMMARY. *By C. R. Ashbee.*

§ 102. Summary of practical proposals.

WE have thus been through a variety of different forms of handicraft, regarding them educationally; a few words may not, therefore, be out of season to sum up—in the first place, the practical proposals; in the second, the educational principles which the authors of the manual have in view.

In Part I. we have considered the technical education movement in so far as it relates to handicraft, and have alluded to the waste of energy and the want of organisation which at present characterise it, especially in London; how it appears void of all method and purpose, and how its proper sphere in education is not yet determined. We then endeavoured to give some idea of the work and the purpose of the Guild and School of Handicraft, and to show how it is seeking to find some practical means of bringing this to fulfilment, not only in London, but in different parts of the country, in connection with the County Councils, or with those who are anxious to add more to the training of the young than can be given by book-learning alone. We emphasised the fact that this work, like all other kindred work, was as yet but an experiment. We then examined this work in its relation to the elementary teacher, and to those elementary teachers in particular who have acted in conjunction with the Guild and School. With a view to making the book of practical value to them we stated in Part II. some of the experiences, methods of teaching, and principles which have guided the educational work of the Guild and School; and we sketched out the lines which our teachers might follow for the building-up of such system of teaching in manual work as might seem to them expedient in accordance with the conditions under which they may be called upon to work.

Not to the elementary teacher only, but to every

instructor who is engaged in the furtherance of manual training, as distinct from the teaching of trades, it is hoped these hints as to the establishment of a workshop, and of the "workshop principle" in technical teaching, may be of service—especially as in so doing he may be helped to get an insight into the union, educationally, of these various methods of handling materials. It is for this reason that we have regarded as necessarily combined carpentry, joinery, modelling, carving, metal work, and the other subjects dealt with in the recent chapters.

§ 103. Summary of educational principles.

As regards the educational principles which these proposals imply, they may be summed up thus :—We consider that in technical matters production and education must be taken together, even as they were in the workshops of mediæval Europe. This, in some form of modern application, we sought to term the "workshop principle," and we endeavoured to show its bearing educationally. We hold firmly that technical education can never take the place of an apprenticeship, and we believe that the apprenticeship difficulty, reacting as it does on the greater economic questions of fluctuation in employment and the subdivision of labour, etc., must be worked out, not educationally but socially. For educational purposes, however, we sought to divide the forms of teaching into three—or, more accurately, into two :—

(1) The teaching of the trade or craft.
(2) The training of brain, hand, eye, etc., generally, for the man or child's improvement.

This second form of training we divided into two—that of the child or the amateur, and that of the teacher of future children—the educationalist.

We noted then, further, that—even as in the production of actual things, so in education—handicraft must be taken as a thing in itself, and not subdivided ; that the student may properly master the relation of design to material, and the adaptabilities of material, and thus develop in himself the powers akin to its use. In the Report of the Government Commission on Welsh Technical and Intermediate Education, of the various subjects—carving, modelling, metal work, carpentry, joinery, and so forth—offered for elementary instruction,

carpentry and joinery were for reasons of utility chosen. The choice may have been a wise one, but the method and motives of the choice were, from an educational point of view, false. The classification was according to utility in material, and postulated the requirement of special faculties in the children for special subjects; no classification could be more futile. It is much the same as classifying the production of works of art according to their materials—oil-art, water-art, clay-art, and so forth. This may be the classification of the tradesman for cataloguing purposes; it is not that of the artist himself, much less that of the educationalist. Handicraft cannot be dissociated from itself, or classified according to its material; it must be taken as a whole, and examined in relation to its production and its educational potentialities—that is, we must say to ourselves, These are the results we want to get; these are the qualities we want to draw forth; can we do it best in wood or in clay, in colour or in metal, or in all combined?

Returning again from the educational to the productive, we hold that it is not in schools and not in evening classes that production must be looked for—for noble production a man's whole life must be given, and to make this more possible we hold that some reorganisation of the modern productive workshop on a co-operative basis is essential. Wise consumption and distribution should be the object of every great community; but its existence should be based on noble production, and the nobility of production can alone be estimated by its influence on the producer. Here again returns the educationalist, for he, if but looking to the partial attainment of this, would guide the education of the young to its recognition; he it is who would seek the higher education in the understanding of this noble production. In this production, and not in the painting of pictures, lies art; and in the understanding of this, and not in the reading of books, lies education.

§ 104. The wisely trained.

In his picturesque sketch of the New Commonwealth Mr. William Morris has sought to give an idea of the perfectly educated man—perfect in heart, in head, in hand, in body; he creates unconsciously; he learns from all things, but from books least of all; he is an

athlete; he is an artificer; and wisdom comes to him from the field, and from the handling of beautiful things. The ideal here conceived is for the New Democracy, but it is not a new ideal, only one re-adapted. Ponocrates, in the training of the wonderful youth Gargantua, educated body and soul in perfection, but neither was perfect without an understanding of noble production; and so says Rabelais, in wisdom as fit for the nineteenth as for the fifteenth century: "Went they likewise to see the drawing of metals, or the casting of great ordnance: so went they to see the lapidaries, the goldsmiths and cutters of precious stones, the alchemists, money-coiners, upholsterers, weavers, velvet-workers, watchmakers, looking-glass makers, printers, organists, dyers, and other such kind of artificers, and everywhere learnt and considered they the industry and invention of the crafts."

We have been too prone of late to neglect these simple maxims of the great educationalists—all the simpler to them that lived in times when most production was beautiful in itself. To us a simple piece of handicraft, joyously, unconsciously created, is an unknown world; and so we regard the training of the young rather as having for its object the driving-in of the facts of life than the drawing-out of the creative and imaginative qualities inherent in every child; but when—as it surely will—the reaction against this materialistic teaching shall come, the child of the new community, trained harmoniously in mind and body, may be taught in the reverence of his Maker to imagine, and in His image to create beautiful things to the service of his fellow-men.

C. R. Ashbee.

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